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WAR DEPARTMENT TECHNICAL MANUAL

RADIO RECEIVERS BC-728-A AND-C, REPAIR INSTRUCTIONS

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SECTION I

DESCRIPTION OF RADIO RECEIVER BC–728–(*)[1]

1. Characteristics

a. Throughout this manual, where text applies equally to all receivers of a given series, the suffix letter is omitted and the symbol (*) is used. The full type number is used only when particular models must be identified. Where no differences occur, all models of both designs are referred to as the receiver.

b. Radio Receiver BC–728–(*) is a six-tube radio receiver constructed for portable or vehicular operation. Its superheterodyne circuit is designed for the reception of amplitude-modulated voice signals, and includes one radio-frequency (r-f) stage, one intermediate-frequency (i-f) stage, and a single output tube. A separate oscillator tube is used. The antenna stage is of the Hazeltine type, and inductive tuning of the antenna, r-f, and oscillator stages is accomplished by an adjustable iron core in each coil. An internal permanent magnet type dynamic speaker is mounted in the housing of the receiver. The jack on the front panel will accommodate headsets equipped with Plug PL–55. The loudspeaker does not operate when the headset is plugged in its jack.

c. Push-button tuning is used to cover the frequency range of 2 to 6 megacycles with four preset adjustable channels (A, B, C, and D).

Button A....2.0—2.6 megacycles
Button B....2.6—3.5 megacycles
Button C....3.5—4.5 megacycles
Button D....4.5—6.0 megacycles

d. Power for operating the receiver is obtained from an external 6- or 12-volt storage battery. A vibrator type plate supply unit furnishes the necessary operating voltages. Approximately 9 volts of bias for the receiver audio output amplifier is delivered by Tube VT–174 used with a separate winding on the power transformer. Suitable hash and filter chokes are included in the circuit. The power unit, except for the external 6- or 12-volt storage battery, is contained within the receiver housing.

Figure 1. Radio Receiver BC–728–(*).

2. Over-all System Function (fig. 3)

The block diagram (fig. 3) illustrates the various stages used in the six-tube superheterodyne circuit of Radio Receiver BC–728–(*). The r-f amplifier is tuned to the frequency of the incoming signal. The signal is amplified in this stage and passed to the control grid of the mixer tube. At the same time, the oscillator stage generates a frequency which is 455 kc higher than the frequency of the incoming signal. In the mixer stage the output of the oscillator is combined with the incoming signal to produce a new radio frequency. This new radio frequency always equals the intermediate frequency of 455 kc. The output of the mixer is amplified in the i-f stage and passed to the second detector. Here the signal is rectified and

[1] See TM 11–859 for installation, operation, and other maintenance data on these equipments.

the resulting audio component is amplified. The audio component is then fed through the audio output amplifier to the speaker or headphones. An automatic volume control voltage is developed in the second detector stage and applied to the grid returns of the first three stages.

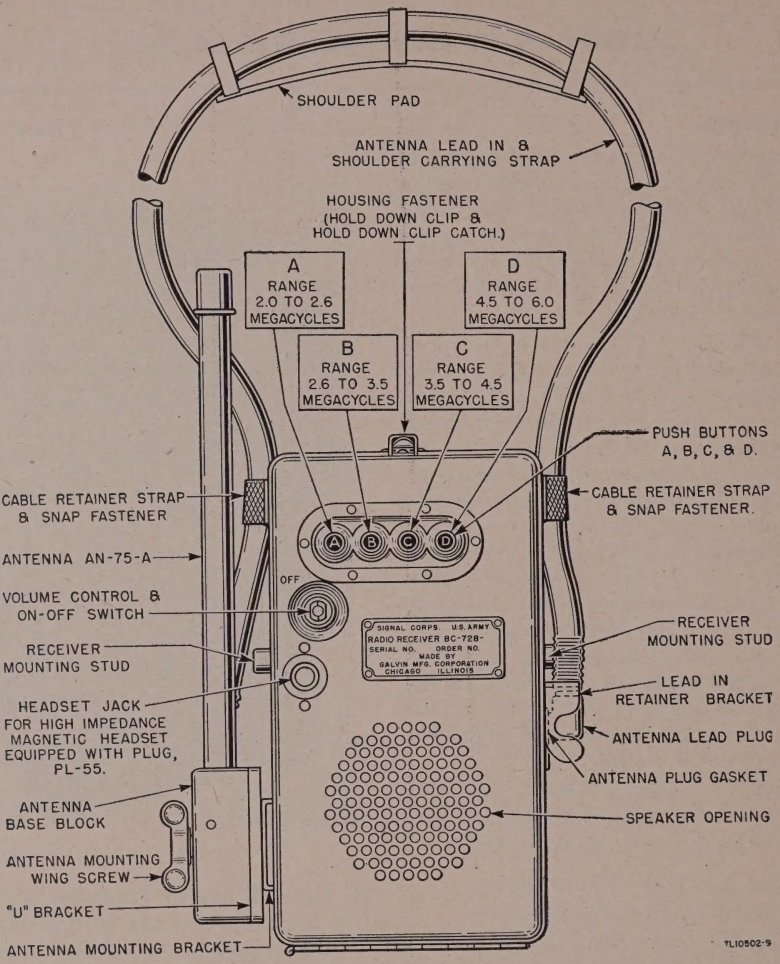

Figure 2. Radio Receiver BC–728–(*), front view.

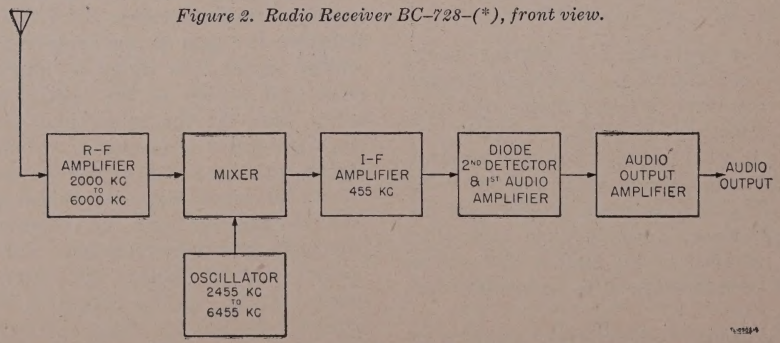

Figure 3. Block diagram of Radio Receiver BC–728–(*).

SECTION II

DIFFERENCES BETWEEN MODELS

3. Design Differences

a. Radio Receivers BC–728–A and BC–728–C and their component parts are identical and all parts are interchangeable. Wherever Radio Receiver BC–728–A or any of its component parts is discussed, the remarks apply also to Radio Receiver BC–728–C and its component parts.

b. On Radio Receiver BC–728–C, produced on Order No. 31188–Phila–43, an additional 250-ohm tap has been provided on the 8,000-ohm secondary winding of transformer T3. The use of the 250-ohm tap will allow the use of a low-impedance headset by changing the impedance to which the set is connected. A tag has been placed on the exterior of the case of these sets, and it is marked with the impedance to which the set is connected. When the impedance is changed by using the 250-ohm tap, this nameplate must be reversed.

c. Signal Corps stock numbers for corresponding parts in each set are identical, with the following exception: Any replaceable parts of Radio Receiver BC–728–A having stock numbers starting with 2C4728A/ will have the A changed to C for Radio Receiver BC–728–C. For example, stock No. 2C4728A/P1 (ref No. R17) will become stock No. 2C4728C/P1 for Radio Receiver BC–728–C.

SECTION III

INITIAL REPAIR PROCEDURES

Note. Before making any repairs or adjustments, all authorized modification work orders must be applied. See War Department Pamphlet 12–6 for list of applicable modification work orders.

4. General

Maintenance personnel should follow the procedure outlined in this manual when repairing and overhauling Radio Receiver BC–728–(*). The repair information in this and the following sections is presented in the order in which the repairman should actually perform the various operations on the equipment in the repair shop. This procedure permits repair of the equipment in the shortest possible time. As a result, sensitivity and selectivity of the equipment will be comparable to that of new equipment.

5. Testing, Inspecting, and Cleaning Equipment

The following items are required for the testing, inspecting, and cleaning of Radio Receiver BC–728–(*).

Item	Description
Signal generator	A signal generator with metered output, covering a frequency range from 400 to 7,000 kc is required. The generator should provide for 30% modulation of the output signal at an audio frequency of 400 cycles. If the generator does not possess internal modulation capabilities, a separate audio frequency source may be used.
Output meter	An output meter with a constant impedance of 4,000 ohms, which is capable of reading small alternating-current (a-c) voltages is required. The ranges for a typical output meter would be: 0-1.5, 0-6, 0-15, 0-60, 0-150 volts.
Voltohmmeter	A multirange instrument capable of measuring resistance values from 0 to 12 megohms, and voltages from 0 to 150 volts direct current (d-c), will be satisfactory. The ranges for a typical voltohmmeter would be 0-3,000 ohms, 0-3 megohms, 0-30 megohms; and 0-2.5, 0-25, 0-50, 0-250 volts.
Tube tester	The tube tester should provide for short-circuit tests, and at least one of the following: an emission test, a transconductance test, a dynamic transconductance test, or a power output test.
Vacuum-tube voltmeter	A vacuum-tube voltmeter will be useful for checking stage gain and the automatic-volume-control (AVC) circuit.
Variable capacitor	A 50-micromicrofarad (mmf) variable capacitor is used with the antenna lead-in for the phantom antenna.
Fixed capacitor	A 100-mmf fixed mica capacitor is used to couple the signal generator to the receiver for presetting the operating frequencies.
Fixed capacitor	A 0.1-microfarad (mf) fixed capacitor is used to couple the signal generator to the receiver for i-f alignment.
Battery	A fully-charged 6- or 12-volt storage battery should be available. If the set has not been modified in accordance with MWO SIG 11–859–3, an internal 2-volt storage Battery BB–54–( ) is used.
Battery cables	Cord CD–618–( ) is necessary to connect the external battery to the receiver. This cord is equipped with a switch actuating plug for operating the change-over switch in the back of the receiver housing when using a 6-volt battery.
Antenna	One Antenna AN–75–( ) complete with lead-in, is required for testing the receiver.
Headset	A high-impedance headset equipped with Plug PL–55 is required.
Hand tools	An assortment of hand tools, including alignment tools and probes, will be needed.
Solvent, Dry-cleaning (SD)	
Pipe cleaners	
Small flashlight	
Padded mallet	
Paint brushes	For touch-up work and dusting.
Sandpaper	Assorted grades.
Dental mirror	For inspection.
Compressed air	Clean and dry.

6. Removal of Vibrators, Connectors, and Tubes (fig. 4)

a. The plug-in parts inside the case of Radio Receiver BC–728–(*) consist of two vibrators, a power connector, a speaker connector, and seven vacuum tubes.

b. To remove these parts, release the fastener on top of the receiver and open the case. Lift and swing out the upper section of the chassis which is hinged inside the case. Do not pry out plug-in parts or pull on the connecting cords or cables. Pull the vibrators and connectors out of their sockets. Shields for tubes V_3 and V_7 are of the snap-in type. All other tube shields have bayonet type locks and are removed by pressing the shield toward the tube base and turning counterclockwise. Do not lose the retainer springs inside the tops of the shields. The tubes should be carefully handled. They do not have protective bases and their connecting pins are easily bent.

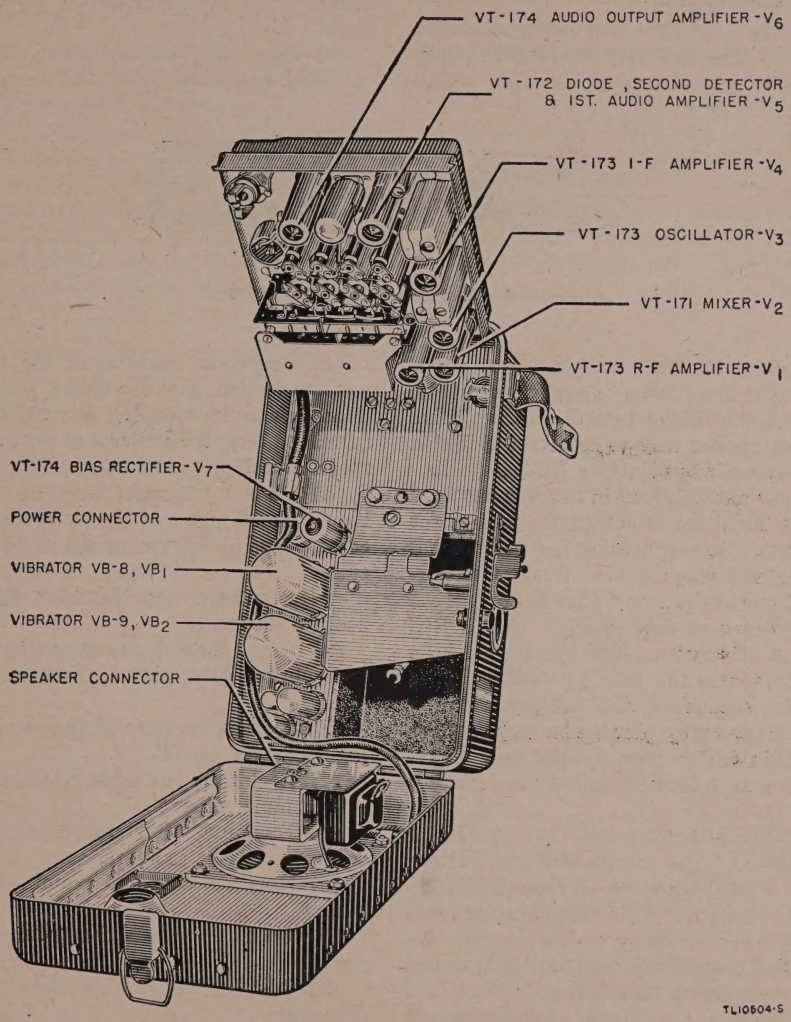

Figure 4. Radio Receiver BC–728–(*), interior View Showing plug-in parts.

7. Cleaning and Inspecting of Chassis and Case

a. MODIFICATIONS. Check Radio Receiver BC–728–(*) to see if the following modifications have been applied:

(1) *Battery vent tube and antenna lead-in brackets.* (*a*) The battery vent tube has been redesigned to prevent plugging due to entrapped electrolyte. The new design is made of vinylite plastic and has an enlarged hole at the end to which the rubber tube is attached. This modification applies only to receivers using an internal 2-volt storage Battery BB–54–( ).

(*b*) A new antenna lead-in bracket has been provided to facilitate attaching the lead-in for vehicular use. The new bracket has two notches for holding the plug: one at the top as formerly, and one at the front. (See fig. 6.)

(2) *Battery vent tube bracket* (MWO SIG 11–859–). A battery vent tube bracket has been designed to secure the tube in position. It is fastened by means of the battery retainer bracket studs and fits under the battery retainer bracket. This modification applies only to receivers using an internal 2-volt storage Battery BB–54–( ).

(3) *Deletion of battery BB–54–*( ) (MWO SIG 11–859–3). The 2-volt storage Battery BB–54–( ) has been removed from Radio Receiver BC–728–(*). This modification was made to prevent corrosion of the receiver elements. A dry electrolytic capacitor is installed in the compartment that formerly contained Battery BB–54–( ). Wiring changes permit the receiver to be operated with an external 6- or 12-volt storage battery.

(4) *Installation of speaker shutter* (MWO SIG 11–859–5). A speaker shutter is installed on the front of the receiver case to protect the loudspeaker from damage from concussion of nearby gunfire.

b. CLEANING. Before starting to make any adjustment or repairs on the receiver, complete the following operations:

(1) Remove any dirt, mud, or grease from the outside of the case.

(2) Inspect the speaker cone, phone jack, antenna receptacle, change-over switch, plug receptacle, and battery connector for foreign material.

(3) Open the case and clean off any parts corroded by spilled battery acid or gas fumes.

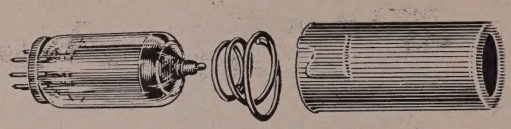

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Figure 5. Tube, shield, and retainer spring.

(4) Clean the contacts of the push-button selector switch and the phone jack. Use pipe cleaners and dry-cleaning solvent, and be careful not to bend the contacts or poor contact and rough switch operation may result.

(5) Do not use steel wool to remove corrosion. Small pieces of it may break off and become lodged in the wiring and cause a short circuit.

c. INSPECTION. (1) Examine the case for dents or holes.

(2) Check the antenna mounting and lead-in brackets for deformation, fractures, and rigidity.

(3) Inspect the base of the receiver mounting studs for cracks.

(4) Look over the cable retainer straps and their snap fasteners.

(5) Examine the neoprene push-button cover for cracks or tears.

(6) Open the case and examine the housing gasket.

(7) Check the volume control and phone jack gaskets.

(8) Inspect the speaker cone for possible damage.

(9) Check the mechanical operation of all switches.

(10) Test all soldered connections for rigidity. The front plate must be removed, and the power supply must be taken from the case to obtain access to all connections.

(11) Be sure that screw terminals are tight.

(12) Inspect crossing wires and similar points where insulation failure may cause short circuits.

(13) Check for blackened resistors. They are usually burned out.

(14) Examine wet filter capacitors for any white deposits on the outside of their containers. Excessive heat causes the electrolyte to leak out.

8. Cleaning, Inspecting, and Testing of Tubes, Vibrators, and Connectors

a. TUBES. The tubes are of the miniature type, with glass bulbs and no protective bases. (See fig. 5.) They fit a button-base socket and require no special cleaning procedure. Inspect them for bent pins and collapsed stems. Most modern tube testers are equipped to handle them. Make as many of the following tests as equipment permits: shorts, emission, transconductance, dynamic transconductance, and power output.

b. VIBRATORS. The vibrators are sealed in cans and should not be taken apart. Clean the connecting pins if necessary. If a vibrator seems faulty, test it in a similar power supply known to be in good working order. Never replace a vibrator until you are certain that it is defective. When an overload condition is suspected, be sure to correct the trouble before installing a new vibrator.

c. PLUGS AND RECEPTACLES. Clean the contacts and inspect the molded parts for cracks. Check all wires and contacts for continuity and see that mechanical connections are good.

SECTION IV

PRELIMINARY TROUBLE-SHOOTING PROCEDURES

9. Resistance Measurements

a. POWER SUPPLY RESISTANCE. The following charts indicate normal resistance values obtained by point-to-point measurements on Radio Receiver BC–728–(*) when it is in satisfactory operating condition. If these values are not obtained, check circuits for loose connections, shorts, or faulty parts. Perform the following operations:

(1) Remove the bias rectifier V_7 and the vibrators VB_1 and VB_2.

(2) Remove the power connector plug from the power supply receptacle.

(3) Disconnect the battery leads.

(4) Take all readings with an ohmmeter having a range from 0 to 10,000 ohms. Choose the meter scale giving the greatest usable deflection.

(*a*) *Input circuit* (*fig. 19*). The battery input circuit is connected through a plug located in the back of the receiver housing.

BATTERY SUPPLY PLUG

Pin No.	Resistance to chassis
1	Open circuit
2	Open circuit
3	Open circuit
4	0 ohms

(b) Output circuit (fig. 19). The power supply output receptacle is located next to the bias rectifier tube V_7.

POWER SUPPLY RECEPTACLE

Pin No.	Resistance to chassis
1	Open circuit
2	110 ohms
3	8,200 ohms (reverse meter leads if reading is wrong)
4	*(approximately 8,000 ohms to open circuit)
5	47 ohms

*This reading will vary because of leakage of electrolytic capacitor C_{37}.

b. RECEIVER CIRCUIT RESISTANCE. Use of this data, combined with logical circuit analysis, will frequently disclose the source of trouble in an improperly operating or dead receiver. Perform the following operations:

(1) Remove all tubes. Besides producing erroneous readings, tube filaments can be burned out by the high-ohmmeter current used in some ohmmeters.

(2) Disconnect the speaker plug from the speaker connector receptacle.

(3) Turn switch SW_2 to the OFF position.

(4) Remove the power connector plug from the power supply receptacle.

(5) Make certain that the headset plug is not inserted in the jack.

(6) Take all readings with an ohmmeter having a range from 0 to 12 megohms. Use the meter scale giving the greatest usable deflection.

(*a*) *Receiver power input (fig. 26).*

POWER SUPPLY PLUG

Pin No.	Resistance to chassis
1	Open circuit
2	Open circuit
3	Open circuit
4	Open circuit
5	300 ohms

Resistance between pins 1 and 2 of power supply plug should read:

Open circuit with switch SW_2 in the OFF position.

0 ohms with switch SW_2 in the ON position.

(*b*) *Audio output receptacle (fig. 18).*

SPEAKER RECEPTACLE

Pin No.	Resistance to chassis
1	Open circuit
2	Open circuit
3	0 ohms
4	0 ohms
5	Open circuit

(c) *Speaker plug mounted on speaker (fig. 18).*

SPEAKER PLUG

Reading between	Resistance
Pins 1 and 5	750 ohms
Pins 2 and 3	750 ohms
Pins 3 and 4	3 ohms
Pins 2 and 4	750 ohms
Pin 3 and chassis	0 ohms

10. Power Supply Voltage Measurements (fig. 19)

Replace vibrators VB_1, VB_2, and rectifier tube V_7. Use Cord CD–618–( ) to connect an external 6- or 12-volt storage battery. The changeover switch actuating plug attached to the cord should be inserted in the back of the receiver case when a 6-volt battery is used. (See fig. 6.) The plug is not inserted when a 12-volt battery is used. Place a jumper wire from pin 1 to pin 2 of the power connector receptacle. Readings can be taken with a 0- to 150-volt d-c meter with a resistance of 1,000 ohms per volt.

POWER SUPPLY RECEPTACLE

Pin No.	Voltage to chassis
3	−9
4	+95
5	+1.35

11. Operating Test

If satisfactory results are obtained from the preceding resistance and voltage checks, proceed with the operating test.

a. Install all tubes complete with shields.
b. Install vibrators VB_1 and VB_2.
c. Connect the speaker plug.
d. Connect the power supply plug.
e. Check to see that switch SW_2 is OFF.
f. Connect the battery leads.
g. Turn on the receiver by rotating the volume control knob in a clockwise direction. A click will indicate that the set has been turned on. After a moment a rushing sound will indicate that the receiver is operating.
h. Watch for any abnormalities. If arcing, crackling, smoking, or burning is noticed, turn off the set immediately. Then check the receiver for shorts or overloads. For detailed troubleshooting procedures see section VI.

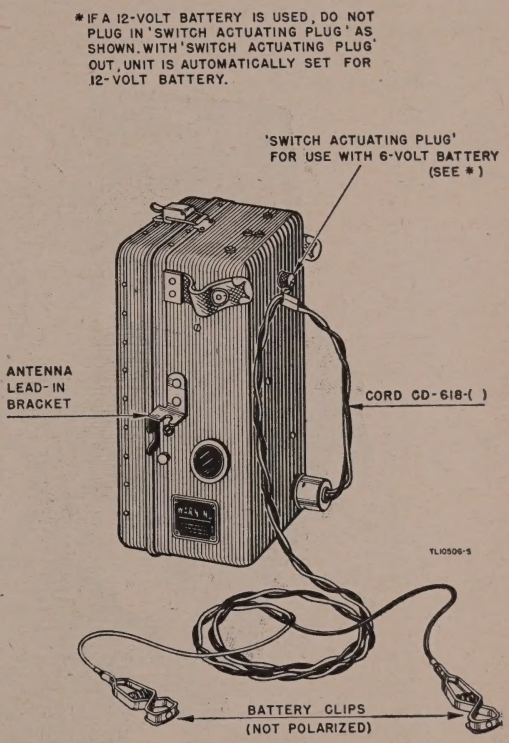


Figure 6. Radio Receiver BC–728–(*), insertion of plug to permit use of 6-volt battery.

SECTION V

ALIGNMENT PROCEDURE

12. I-F Alignment (fig. 26).
To align the i-f amplifier and the diode detector stages, set the receiver up for operation, but do not connect the antenna. Then proceed as follows. (See fig. 7.)

a. Set up a signal generator and tune it accurately to 455 kc.

b. Connect the output of the signal generator through a 0.1-microfarad capacitor to the antenna receptacle of the receiver.

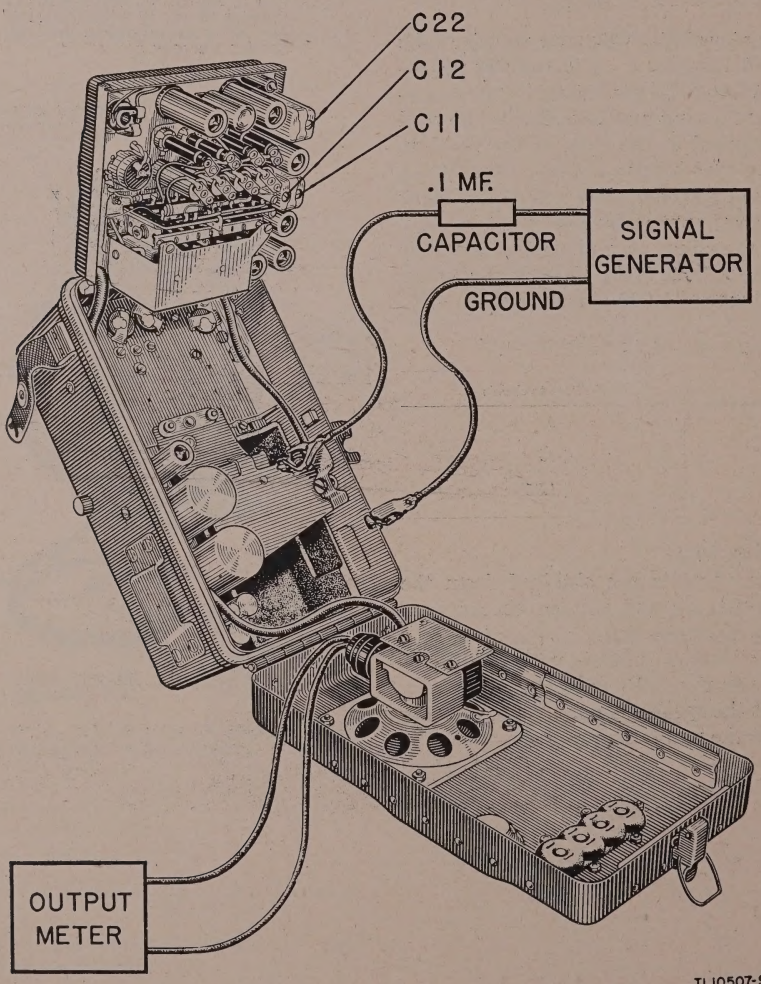


Figure 7. Alignment procedure.

c. Connect the ground lead of the signal generator to the housing of the receiver.

d. Turn the receiver volume control fully clockwise and press tuning button A.

e. Connect an output meter to the voice coil leads of the loudspeaker.

f. Feed a modulated signal of at least 50,000 microvolts into the receiver.

g. Tune capacitor C_{22} for the greatest reading on the output meter.

h. Tune trimmer C_{12} for the greatest reading.

i. Tune trimmer C_{11} for the greatest reading.

j. Repeat the trimmer adjustments very carefully a second and a third time.

k. The signal generator output should be reduced to give an audio output of not more than 0.4 volt as the adjustments proceed.

13. Presetting Frequency (fig. 26)

Tuning Radio Receiver BC–728–(*) is accomplished by means of four push buttons (A, B, C, and D). Each of these buttons has adjustments (ANT. 3, RF 2, and OSC. 1). These twelve tuning adjustment knobs are numbered on the chassis front plate from A1 to D3. (See fig. 9.) To preset the frequency of the buttons proceed as follows:

a. Set up the receiver for operation, but do not connect the antenna.

b. Open the front of the receiver case.

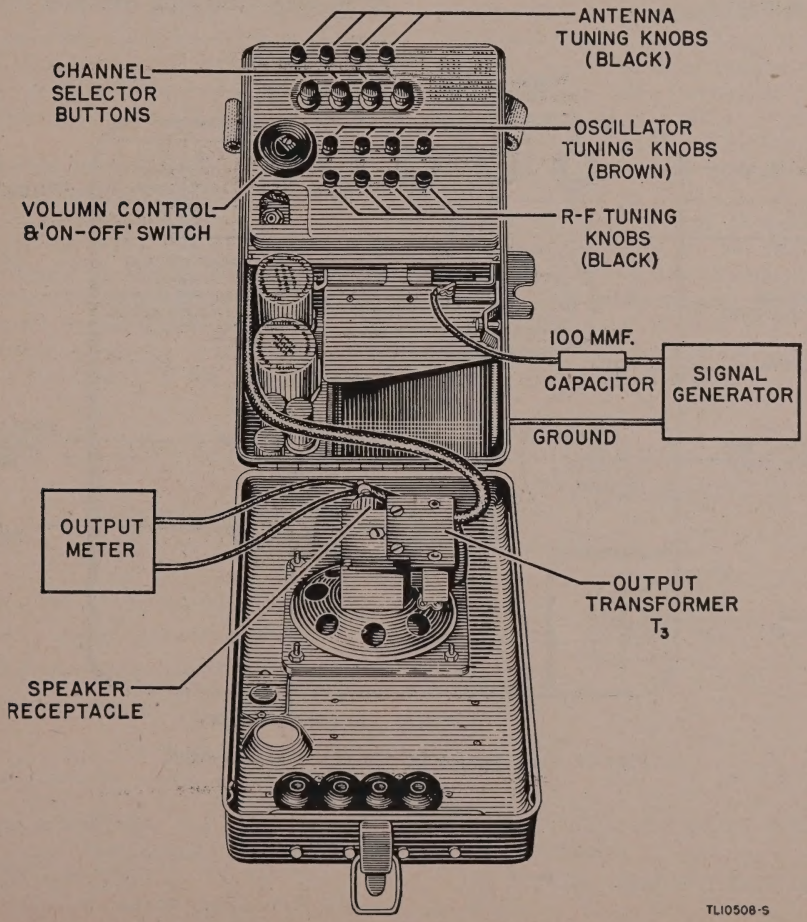


Figure 8. Radio Receiver BC–728–(*), presetting frequency.

c. Connect the output of the signal generator to the antenna receptacle of the receiver, using a 100-micromicrofarad capacitor in series with the lead.

d. Connect the ground lead of the signal generator to the receiver housing.

e. Connect an output meter across the voice coil terminals of the loudspeaker. Use the 1.5-volt scale.

f. Tune the signal generator to the frequency desired, and feed a 400-cycle modulated signal of approximately 1,500 microvolts into the receiver.

g. Turn the receiver volume control fully clockwise and press one of the receiver tuning buttons according to the frequency selected with the signal generator.

h. Clockwise rotation of the tuning knobs lowers the frequency; counterclockwise rotation raises the frequency. Carefully turn the three knobs in sequence toward the frequency desired until the reading of the output meter is maximum. This can be done most easily if the three knobs are kept in step. Rotate one knob a turn or two, then rotate knobs two and three the same number of turns. Continue with this procedure until the highest reading is reached.

i. Carefully repeat the final adjustment several times to make certain that the output reading is maximum.

j. Disconnect the output meter. The 400-cycle tone should now be heard.

k. Repeat steps *f* to *j* above for setting each of the three remaining frequency buttons.

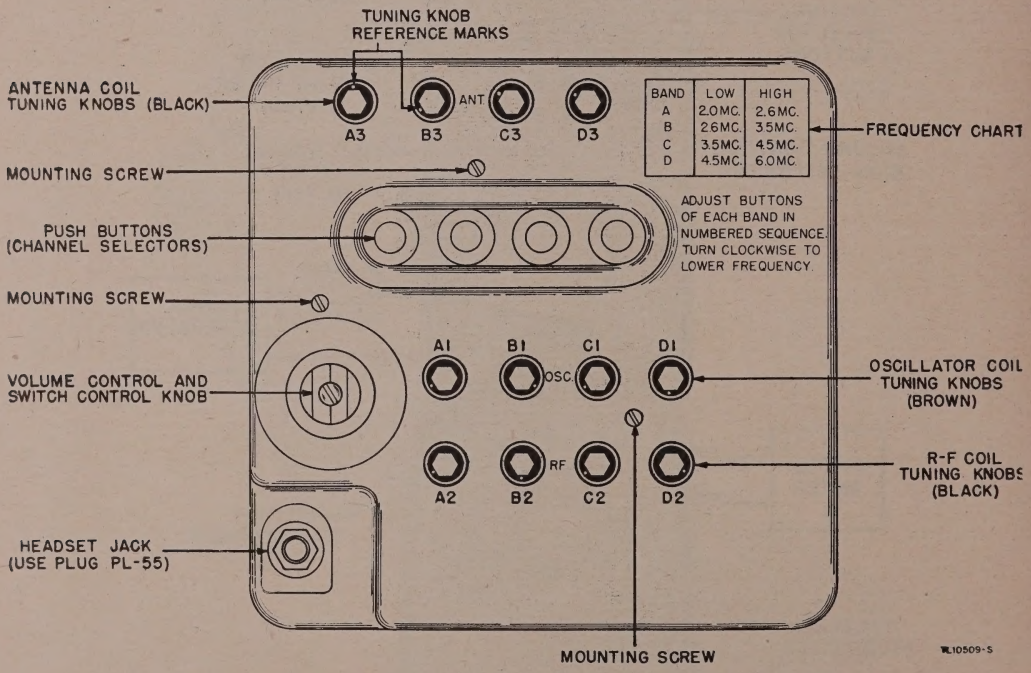


Figure 9. Radio Receiver BC–728–(*), front plate detail.

SECTION VI

DETAILED TROUBLE-SHOOTING PROCEDURES

14. Localizing Trouble to a Stage

If the receiver is inoperative or has weak output when aligned, detailed trouble shooting is required. Frequently the trouble can be localized to a particular stage by the circuit disturbance method. Turn the set on and allow time for the tubes to warm up. Then touch a metallic object, such as a coin, key, or small screw driver, to the control grid of each tube in succession. Begin with the output tube and work forward to the input tube. If a click or hum is heard in the headset or speaker, the stage is generally operative. When no response is heard, the trouble lies between the point where the last click was heard and the point of no response. (See sec. VIII.)

15. Checking Audio Circuit

a. TEST AND INDICATION. (1) Set up the receiver for operation.

(2) Turn the volume control fully clockwise.

(3) Connect the ground lead of an audio-signal generator to the receiver chassis.

(4) Feed a signal from the audio-signal generator through a 0.01-mf capacitor to the diode detector plate (pin 3 of the second detector tube). A loud clear signal should be heard if the audio circuits are functioning properly.

(5) If a weak signal or no signal is heard, feed the signal from the audio-signal generator to the output, of each of the two audio stages. Begin with the last stage and continue until the defective or inoperative stage is located.

b. LOCALIZATION. If a stage is defective see section VIII. Trace the trouble to the defective part or parts by resistance and voltage checks.

16. Use of Signal-Substitution Analysis Chart

The signal-substitution analysis chart lists minimum and maximum input voltages required, at each of the r-f and i-f stages of the receiver, to produce a signal output of 50 milliwatts (equivalent to 0.4-volt across the voice coil). This chart can be used as a standard when trouble shooting to check over-all gain of the receiver, the gain of each r-f or i-f stage, or a group of stages. When the receiver output is low, localize the defective stage by measuring the individual stage gain, or by checking the signal-voltage level of each stage against the chart while employing the signal-substitution method of trouble shooting.

SIGNAL-SUBSTITUTION ANALYSIS CHART

Signal test points	Signal generator output* necessary to produce output meter reading of 0.4 volt		
	Frequency	Signal voltage (microvolts)	
		Minimum	Maximum
Diode detector plate—Pin 3 of tube V5	455 kc	1,900	2,100
Control grid of i-f amplifier—Pin 6 of tube V4	455 kc	72	82
Control grid of mixer—Pin 6 of tube V2	2 to 6 mc	90	100
Control grid of r-f amplifier—Pin 6 of tube VI	2 to 6 mc	4	10
Antenna	2 to 6 mc	0.8	1.2

*Signal generator set for 30% modulation at 400 cycles.

17. Signal Substitution

a. TEST AND INDICATION. (1) Set up the receiver for operation.

(2) Connect an output meter, with an impedance of 4,000-ohms, to the voice coil leads of the loudspeaker.

(3) Turn the receiver volume control fully clockwise.

(4) Using a signal generator with a measured output, feed a modulated signal of the correct frequency and voltage to each of the signal test points. See the signal-substitution analysis chart. Begin with the diode detector plate (pin 3 of tube V5) and work forward to the receiver input.

(5) If an output of 0.4 volt cannot be obtained when a signal voltage within the limits given on the chart is applied to the stage, that stage is defective.

b. LOCALIZATION. If the gain of a stage is abnormal, replace the tube and realign the stage. If the gain of that stage is still low, make a resistance and voltage check to locate the defective part. (See sec. VIII.)

18. Measuring Individual Stage Gain

Approximate individual stage gain can be measured conveniently by the signal-substitution method. Feed a modulated signal of the required frequency to the input of the stage being checked. Adjust the output of the signal generator to obtain a reading of 0.4 volt on the output meter. Record the signal generator output as A. Then feed a modulated signal of the required frequency to the input of the stage following the one being checked. Again adjust the output of the signal generator to obtain a reading of 0.4 volt on the output meter. Record this signal generator output as B. Divide B by A to determine the approximate gain of the stage being checked.

19. Socket Terminal Resistance Values (fig. 10)

Remove the front plate from the receiver chassis to make the socket terminals accessible. Make certain that the power supply is disconnected and that all tubes are removed. Make all measurements between the socket terminals and the chassis. All readings can be taken with an ohmmeter having a range from 0 to 12 megohms. Use the meter scale giving the greatest usable deflection.

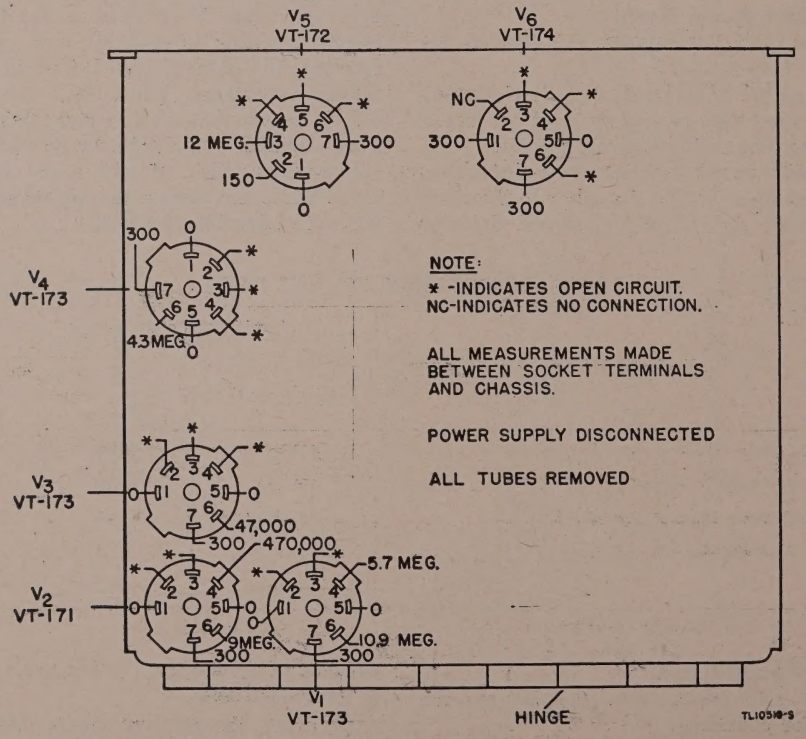


Figure 10. Radio Receiver BC–728–(*), socket terminal resistance values.

20. Socket Terminal Voltages (fig. 11)

This chart indicates normal voltages obtained by point to point measurements on the receiver when it is in satisfactory operating condition. All readings can be taken between the socket terminals and the chassis with a voltmeter having a range from 0 to 150-volts d-c at 1,000-ohms per volt. Choose the meter scale giving the greatest usable deflection.

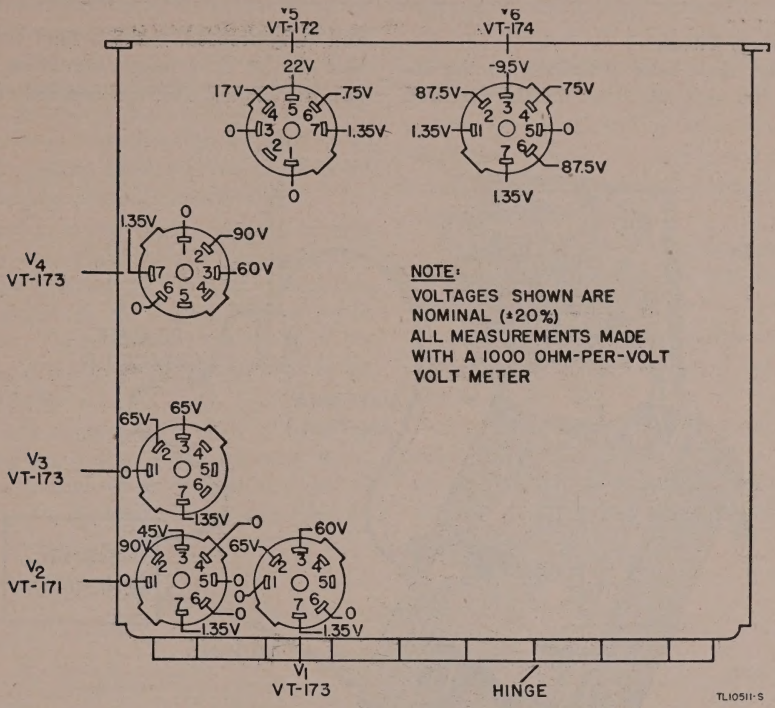


Figure 11. Radio Receiver BC–728–(*), tube socket voltage diagram.

21. Moistureproofing and Fungiproofing

a. GENERAL. Communication failures commonly occur when Signal Corps equipment is operated in tropical areas where temperature and relative humidity are extremely high. A moisture- and fungi-resistant varnish, properly applied with a spray gun, provides a reasonable degree of protection against fungus growth, insects, corrosion, salt spray, and moisture.

b. REFERENCE. For a full description of the varnish-spray method of moistureproofing and fungiproofing, see TB SIG 13 and TM 11–859.

SECTION VII

FINAL TESTING

22. Alignment Check

After repairs have been completed on the receiver and the unit has been moistureproofed and fungiproofed, make a final test to insure that the set is in proper condition for tactical use. Although the set was correctly aligned dur-

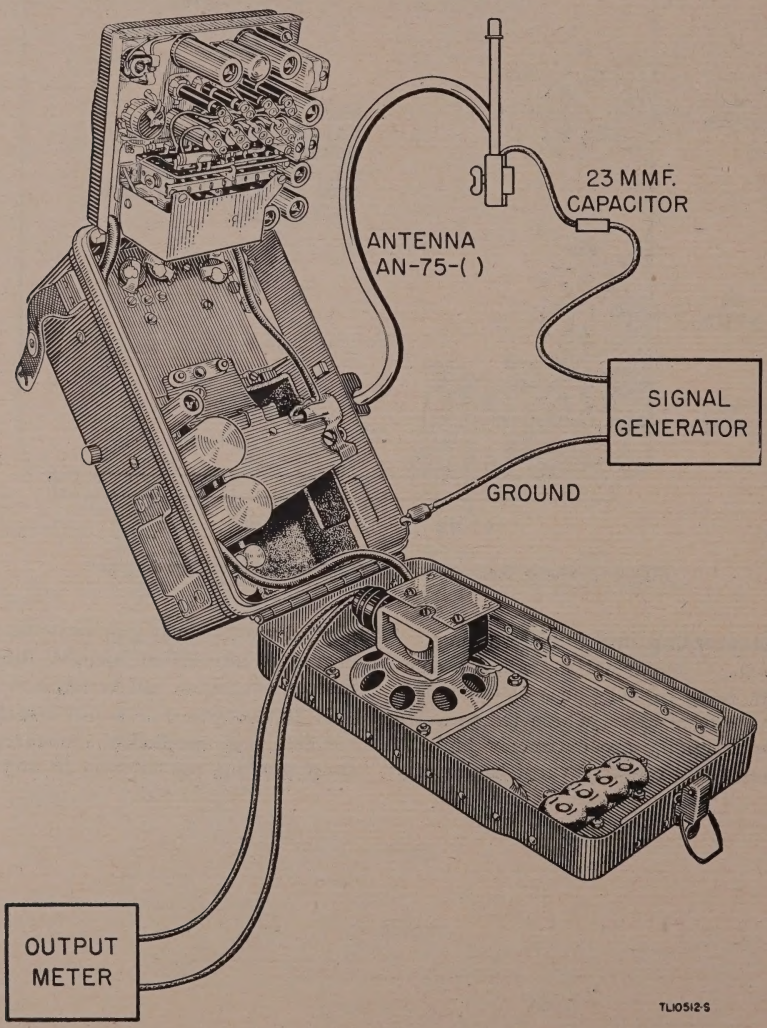


Figure 12. Preparation for over-all performance tests.

ing the repair procedure, a recheck of the alignment (par. 12) is necessary after the unit has been moistureproofed and fungiproofed.

23. Over-all Performance Tests

After the alignment check, make the following over-all performance tests: sensitivity test, noise ratio test, selectivity test, audio output test. Considerable time is required to set Radio Receiver BC–728–(*) to the various check-point frequencies. Time will be saved by making all of the performance tests for one check-point frequency before proceeding to the next.

a. PREPARATION FOR TESTS. (1) Set up the receiver for operation. Tune the signal generator and the receiver to the first check-point frequency shown in the selectivity and sensitivity charts. (Instructions for presetting the frequencies of the receiver tuning buttons are given in par. 13.)

(2) Connect Antenna AN–75–( ). (See fig. 12.) Connect one lead of a 23-mmf capacitor to the antenna lead-in where it joins the base of the antenna. (A 50-mmf variable capacitor set for approximately 23-mmf may be used.)

(3) Connect the other lead of the 23-mmf capacitor to the output of the signal generator.

(4) Connect the ground lead of the signal generator to the receiver chassis.

(5) Connect an output meter with an impedance of 4,000 ohms across the voice coil of the loudspeaker. If a VTVM is used, place a 4,000-ohm noninductive resistor in parallel with it.

(6) Turn the receiver volume control fully clockwise.

(7) Feed a 30 percent modulated 400-cycle signal into the receiver.

b. SENSITIVITY TEST. With the equipment set up according to the instructions given in paragraph 23*a*, proceed as follows:

(1) Set the signal generator output attenuator to produce a reading of 0.4 volt on the output meter.

(2) Compare the signal generator output reading (in microvolts) with the value shown on the sensitivity chart. This reading should not exceed the maximum value shown on the chart.

OVER-ALL SENSITIVITY CHART

Button	Check-point frequency (megacycles)	Signal generator output in microvolts necessary to produce output meter reading shown		Output meter reading (volts)
		Normal	Maximum	
A	2.0	5.6	9	0.4
	2.3	5.9	9	0.4
	2.6	6.5	9	0.4
B	2.6	4.6	9	0.4
	3.0	5.2	9	0.4
	3.5	6.4	9	0.4
C	3.5	4.7	9	0.4
	4.0	4.6	9	0.4
	4.5	4.6	9	0.4
D	4.5	4.4	9	0.4
	5.1	4.9	9	0.4
	6.0	5.4	9	0.4

*The signal generator must be set for 30 percent modulation at 400 cycles.

c. NOISE RATIO TEST. With the equipment set up according to the instructions given in paragraph 23*a*, proceed as follows:

(1) Set the signal generator output attenuator to produce a reading of 0.4 volt on the output meter.

(2) Turn off the modulation of the signal generator. The output meter should read 0.28 volt or less.

Note. The voltage readings given above for the signal-to-noise ratio are approximately equivalent to a power ratio of three to one.

d. SELECTIVITY TEST. With the equipment set up according to the instructions given in paragraph 23*a*, proceed as follows:

(1) Set the signal generator output attenuator to ten times the normal output used for the sensitivity test. See the over-all sensitivity chart.

(2) Change the frequency of the signal generator, first above then below the check-point frequency. Stop at the frequencies where the output meter reads 0.4 volt. The difference between these two frequencies represents the selectivity of the receiver. Compare with the values shown on the selectivity chart.

OVER-ALL SELECTIVITY CHART

Button	Check-point frequency (kilocycles)	Input to receiver (microvolts)	Signal generator frequency settings above and below check-point frequencies which should produce an output meter reading of 0.4 volts		
			Normal bandwidth (kilocycles)	Minimum bandwidth (kilocycles)	Maximum bandwidth (kilocycles)
A	2,000	56	1,995 to 2,005	1,997 to 2,003	1,993 to 2,007
B	2,600	46	2,595 to 2,605	2,597 to 2,603	2,593 to 2,607
C	3,500	47	3,495 to 3,505	3,497 to 3,503	3,493 to 3,507
D	4,500	44	4,495 to 4,505	4,497 to 4,503	4,493 to 4,507

e. AUDIO OUTPUT TEST. Make this test on the first check-point frequency only. With the equipment set up according to the instructions given in paragraph 23*a*, set the signal generator for 10,000 microvolt output. The output meter reading should be approximately 1.1 volts.

Note. After completing the above tests for the first check-point frequency, repeat the sensitivity, noise ratio, and selectivity tests for the remaining check-point frequencies.

24. Operational Test.

Set up the receiver for operation and check the performance on each band.

SECTION VIII

INDIVIDUAL STAGE AND CIRCUIT REPAIR DATA

25. R-F Amplifier

Ref. symbol	Signal Corps stock No.	Name of part and description	Function
C_1		CAPACITOR: fixed; ceramic; 50-mmf, ±2%.	Antenna loading.
C_2	3D9070–4	CAPACITOR: fixed; ceramic; 70-mmf, ±2%; negative temperature coefficient 0.0002 mmf/mmf/°C.	Antenna coil compensator.
C_3	3D9100–57	CAPACITOR: fixed; ceramic; 100-mmf, ±5%; negative temperature coefficient 0.	Coupling.
C_4	3DA10–102	CAPACITOR: fixed; paper; 0.01-mf, ±10%; 100 w-v; bakelite encased.	Bypass, avc.
C_5	3D9080–1	CAPACITOR: fixed; ceramic; 80-mmf, ±2%; negative temperature coefficient 0.	Padding L_6.
C_6	3D9120–2	CAPACITOR; fixed; ceramic; 120-mmf, ±2%; negative temperature coefficient 0.	Padding L_5.
C_7	3D9070–4	CAPACITOR: fixed; ceramic; 70-mmf, ±2%; negative temperature coefficient 0.0002 mmf/mmf/°C.	R-f coil compensator
C_8	3DA250–17	CAPACITOR: fixed; paper; 0.25-mf, ±20%; 200 w-v.	Bypass, B+.
C_9	3D9120–2	CAPACITOR: fixed; ceramic; 120-mmf, ±2%; negative temperature coefficient 0.	Coupling, V_1 to V_2.
L_1	3C625–12	COIL: orange and blue dot coding; 130 turns No. 36 single celanese enameled wire on 5/16″ diameter form; iron core tuned; frequency range 2.0 to 2.6 megacycles.	Antenna coil, A channel.
L_2	3C625–13	COIL: orange and green dot coding; 100 turns No. 36 single celanese enameled wire on 5/16″ diameter form; iron core tuned, frequency range 2.6 to 3.5 megacycles.	Antenna coil, B channel.
L_3	3C625–14	COIL: orange and yellow dot coding; 80 turns No. 36 single celanese enameled wire on 5/16″ diameter form; iron core tuned; frequency range 3.5 to 4.5 megacycles.	Antenna coil, C channel.
L_4	3C625–15	COIL: orange and red dot coding; 61 turns No. 36 celanese enameled wire on 5/16″ diameter form; iron core tuned; frequency range 4.5 to 6.0 megacycles.	Antenna coil, D channel.
L_5	3C625–3	COIL: white and blue dot coding; 65 turns No. 36 plain enameled wire on 5/16″ diameter form; iron core tuned; frequency range 2.0 to 2.6 megacycles.	R-F coil, A channel.
L_6	3C625–4	COIL: white and green dot coding; 54 turns No. 36 plain enameled wire on 5/16″ diameter form; iron core tuned; frequency range 2.6 to 3.5 megacycles.	R-F coil, B channel.
L_7	3C625–5	COIL: white and yellow dot coding; 61 turns No. 36 plain enameled wire on 5/16″ diameter form; iron core tuned; frequency range 3.5 to 4.5 megacycles.	R-F coil, C channel.
L_8	3C625–6	COIL: white and red dot coding; 49 turns No. 36 plain enameled wire on 5/16″ diameter form; iron core tuned; frequency range 4.5 to 6.0 megacycles.	R-F coil, D channel.
R_1	3Z6803–A3–1	RESISTOR: fixed, carbon; 3.3-megohm, ±10%, 1/3-watt; insulated.	V_1, grid return.
R_2	3Z6803–A3–1	RESISTOR: fixed; carbon; 3.3-megohm, ±10%, 1/3-watt; insulated.	Filter, a-v-c.
R_3		RESISTOR: fixed; carbon; 10,000-ohm, ±10%, 1/3-watt; insulated.	B+ isolation.
SW_1 (R, S, and T)	2C4728A/S3	SWITCH: 4 push-button, multicontact type.	Channel selector.
V_1	2T173	TUBE VT-173: RMA type 1T4, r-f Amplifier pentode.	R-f amplifier.

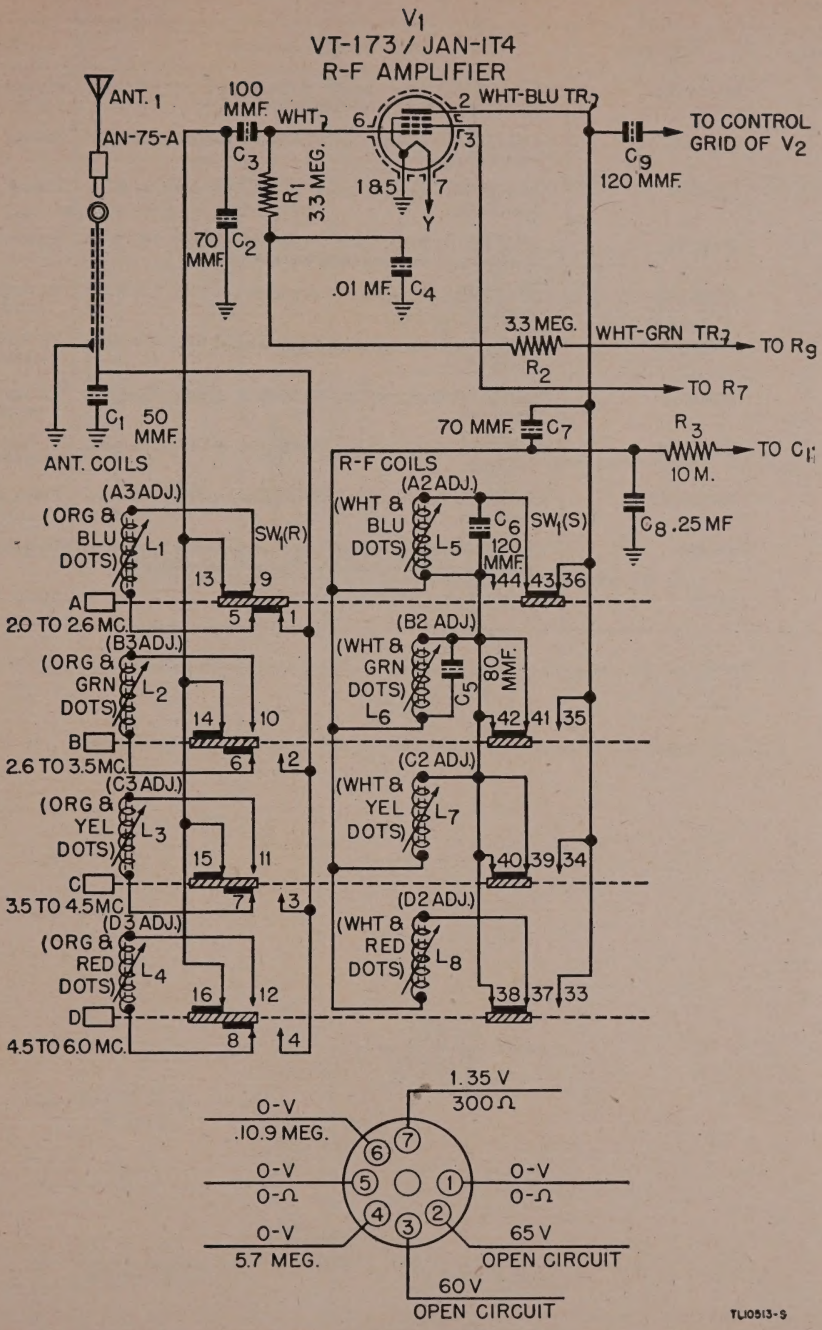
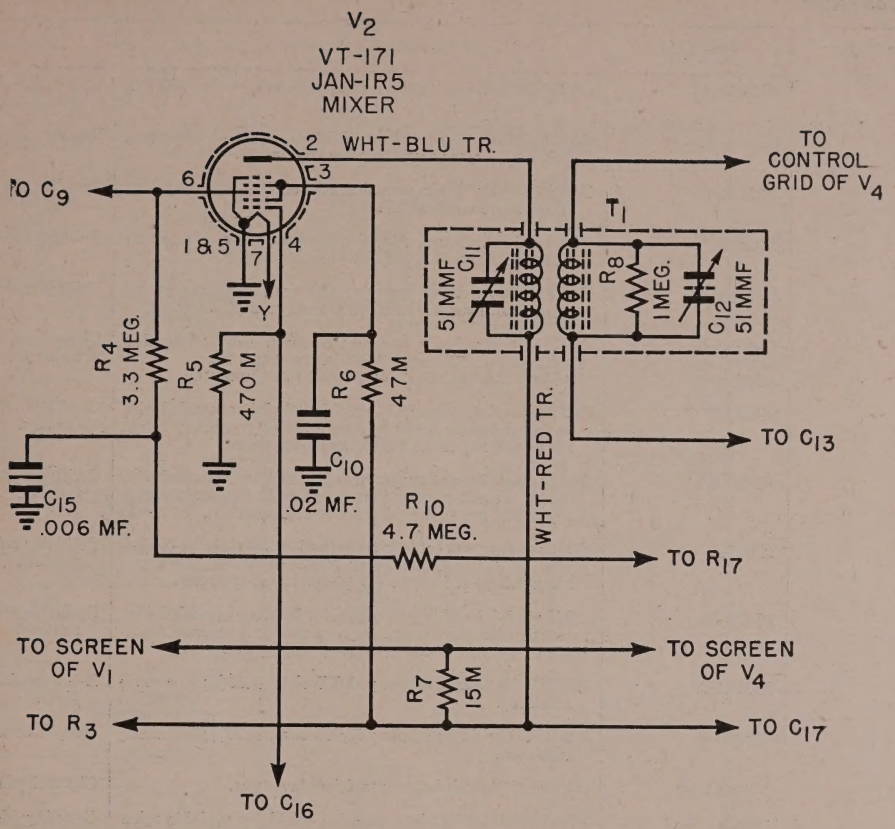


Figure 13. R-f amplifier stage diagram.

26. Mixer

Ref. symbol	Signal Corps stock No.	Name of part and description	Function
C_{10}	3DA20–22	CAPACITOR: fixed; paper; 0.02-mf, ±20%; 100 w-v; shielded; in same mounting bracket as C_{14}.	Bypass, V_2 screen grid.
C_{11}	3D9051V	CAPACITOR: variable; mica; 51-mmf nominal; on same base as C_{12}	Tuning, T_1 primary.
C_{12}	3D9051V	CAPACITOR: variable; mica; 51-mmf nominal; on same base as C_{11}.	Tuning, T_1 secondary
C_{15}	3DA6–27	CAPACITOR: fixed; paper; 0.006-mf, ±20%; 100 w-v; shielded; in same mounting bracket as C_{17}.	Bypass, a-v-c.
R_4	3Z6803–A3–1	RESISTOR: fixed; carbon; 3.3-megohm, ±10%; 1/3-watt; insulated.	V_2, control grid return.
R_5	3Z6747–6	RESISTOR: fixed; carbon; 470,000-ohm, ±10%; 1/3-watt; insulated.	V_3, injector grid return.
R_6	3Z6647–5	RESISTOR: fixed; carbon; 47,000-ohm, ±10%; 1/3-watt; insulated.	Voltage dropping V_2 screen grid.
R_7	3Z6615–26	RESISTOR: fixed; carbon; 15,000-ohm, ±10%; 1/3-watt; insulated.	Voltage dropping, V_1 and V_4 screen grid.
R_{10}	3Z6804–A7–1	RESISTOR: fixed; carbon; 4.7-megohm, ±10%; 1/3-watt; insulated.	Filter, a-v-c.
T_1	2Z9978	TRANSFORMER: iron core transformer; tuned by variable mica trimmers; includes C_{11}, C_{12}, and R_8; shielded.	Coupling, V_2 to V_4.
V_2	2T171	TUBE VT-171: RMA type 1R5.	Mixer.



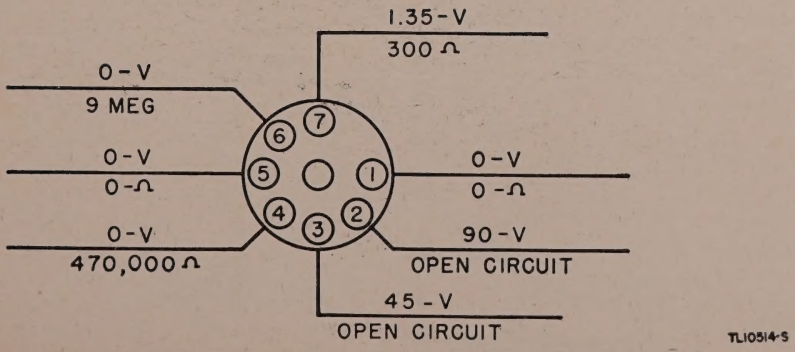


Figure 14. Mixer stage diagram.

27. Oscillator

Ref. symbol	Signal Corps stock No.	Name of part and description	Function
C_{16}	3D9500–46	CAPACITOR: fixed; mica; 500-mmf, +14% −6%; 400 w-v.	Coupling, V_2 injector grid to oscillator.
C_{17}	3DA20–40	CAPACITOR: fixed; paper; 0.02-mf, ±20%; 200 w-v; shielded; in same mounting bracket as C_{15}.	Bypass, B+.
C_{18}	3D9120–2	CAPACITOR: fixed; ceramic; 120-mmf, ±2%; negative temperature coefficient 0.	Coupling, V_3 control grid.
C_{19}	3D9075–7	CAPACITOR: fixed; ceramic; 75-mmf, ±2%; negative temperature coefficient 0.00003 mmf/mmf/°C.	Voltage divider, V_3.
C_{20}	3D9100–83	CAPACITOR: fixed, ceramic; 100-mmf, ±2%; negative temperature coefficient 0.00003 mmf/mmf/°C.	Voltage divider, V_3.
C_{21}	3D9050–63 3D9050–64 3D9050–65	CAPACITOR: fixed; ceramic; 50-mmf, ±2%; negative temperature coefficient, 0.0001-mmf/mmf/°C. 0.00012-mmf/mmf/°C. or 0.00015-mmf/mmf/°C.	Compensator, oscillator.
L_9	3C625–7	COIL: blue dot coding; 93 turns No. 38 plain enameled wire on 5/16″ diameter form; iron core tuned; frequency range 2.0 (+455 kc) to 2.6 (+455 kc) megacycles.	Oscillator coil, A channel.
L_{10}	3C625–8	COIL: green dot coding; 74 turns No. 38 plain enameled wire on 5/16″ diameter form; iron core tuned; frequency range 2.6 (+455 kc) to 3.5 (+455 kc) megacycles.	Oscillator coil, B channel.
L_{11}	3C625–9	COIL: yellow dot coding; 58 turns No. 38 plain enameled wire on 5/16″ diameter form; iron core tuned; frequency range 3.5 (+455 kc) to 4.5 (+455 kc) megacycles.	Oscillator coil, C channel.
L_{12}	3C625–10	COIL: red dot coding; 46 turns No. 36 plain enameled wire on 5/16″ diameter form; iron core tuned; frequency range 4.5 (+455 kc) to 6.0 (+455 kc) megacycles.	Oscillator coil, D channel.
R_{11}	3Z6612–8	RESISTOR: fixed; carbon; 12,000-ohm, ±10%; 1/3-watt; insulated.	B+ dropping, V_3 plate.
R_{12}	3Z6647–5	RESISTOR: fixed; carbon; 47,000-ohm, ±10%; 1/3-watt; insulated.	Bias, V_3 control grid.
SW_1 (T)	2C4728A/S3	SWITCH: 4 push-button; multicontact type.	Channel selector.
T_1	2Z9978	TRANSFORMER: iron core i-f; tuned by variable mica trimmers; includes C_{11}, C_{12}, and R_8; shielded.	Coupling, V_2 to V_4.
V_3	2T173	TUBE VT-173: RMA type 1T4.	Oscillator.

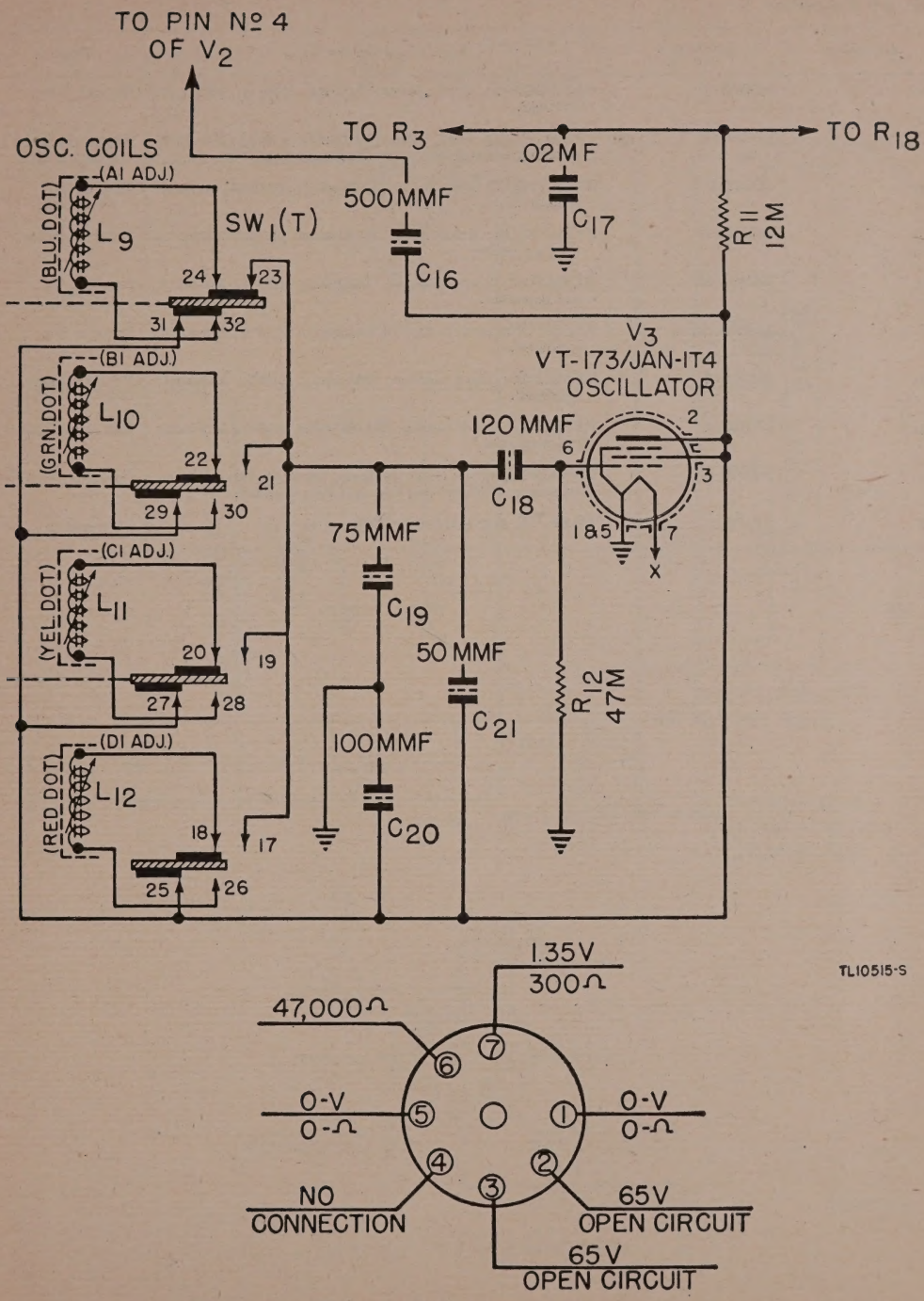


Figure 15. Oscillator stage diagram.

28. I-F Amplifier

Ref. symbol	Signal Corps stock No.	Name of part and description	Function
C_{13}	3DA50–31	CAPACITOR: fixed; paper; 0.05-mf, ±20%; 100 w-v; shielded.	Bypass, a-v-c.
C_{14}	3DA20–22	CAPACITOR: fixed; paper; 0.02-mf, ±20%, 100 w-v; shielded; in same mounting bracket as C_{10}.	Bypass V_1 and V_4 screen grid.
C_{22}	3D9028V	CAPACITOR: variable; mica; 28-mmf; nominal; on same base as C_{23}.	Tuning, T_2 secondary.
C_{23}	3D9070–5	CAPACITOR: fixed; mica; 70-70-mmf; on same base as C_{22}; red screw.	Filter, detector.
R_8	3Z6801–23	RESISTOR: fixed; carbon; 1-megohm, ±10%; 1/5-watt, not insulated.	Loading, T_1 secondary.
R_9	3Z6803–A3–1	RESISTOR: fixed, carbon; 3.3-megohm, ±10%; 1/3-watt; insulated.	Filter, a-v-c.
R_{18}	3Z6056–2	RESISTOR: fixed, carbon; 560-ohm, ±10%; 1/3-watt; insulated.	B+ isolating.
R_{13}	3Z6722–4	RESISTOR: fixed; carbon; 220,000-ohm, ±10%; 1/5-watt; not insulated.	Filter, detector.
T_2	2Z9978–1	TRANSFORMER: iron core diode; tuned by variable mica trimmers; includes C_{22}, C_{23}, and R_{13}; shielded.	Coupling, V_4 to V_5.
V_4	2T173	TUBE VT–173: RMA type 1T4.	I-f amplifier

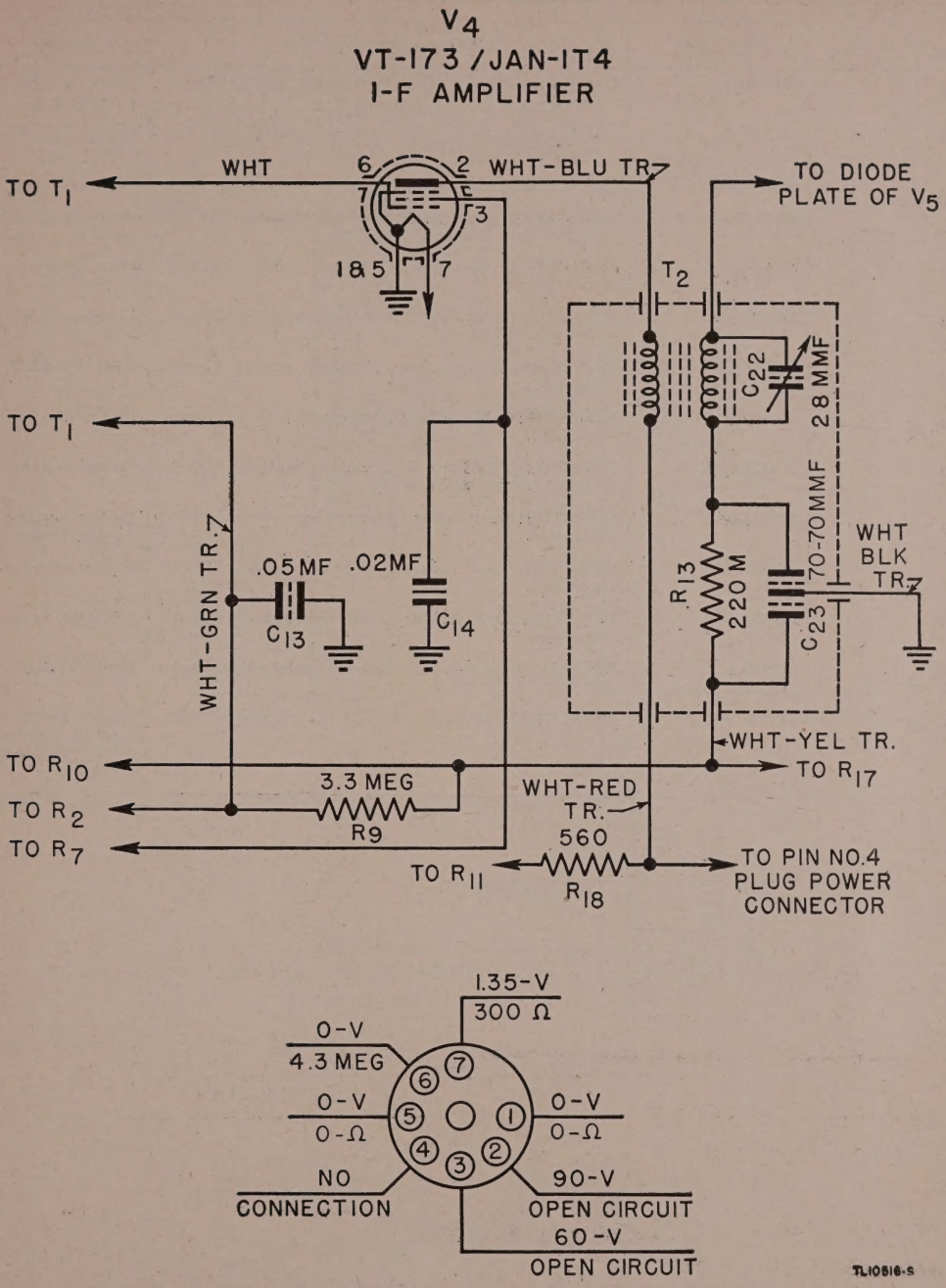


Figure 16. I-f amplifier stage diagram.

29. Diode, Second Detector and First Audio Amplifier

Ref. symbol	Signal Corps stock No.	Name of part and description	Function
C_{24}	3D9600–7	CAPACITOR: fixed; paper; 0.006-mmf, ±20%; 100 w-v; shielded.	Audio coupling, V_5 control grid.
C_{25}	3DA20–23	CAPACITOR: fixed; paper; 0.02-mf, ±20%; 100 w-v; shielded.	Bypass, V_5 screen grid.
C_{26}	3D9100–58	CAPACITOR: fixed; mica; 100-mmf, ±10%; 400 w-v.	Bypass, V_5 r-f plate.
C_{27}	3DA6–28	CAPACITOR: fixed; paper; 0.006-mmf, ±20%; 100 w-v; shielded.	Audio coupling V_5 to V_6.
C_{28}	3DA20–24	CAPACITOR: fixed; paper; 0.02-mf, ±20%; 100 w-v; shielded.	Filter, V_5 B+.
R_{14}	3Z6015–11	RESISTOR: fixed; carbon; 150-ohm, ±10%; 1/3-watt; insulated.	Voltage divider.
R_{15}	3Z6015–11	RESISTOR: fixed; carbon; 150-ohm, ±10%; 1/3-watt; insulated.	Voltage divider.
R_{16}	3Z6810–6	RESISTOR: fixed; carbon; 10-megohm, ±10%; 1/3-watt; insulated.	Grid return, V_5.
R_{17}	2C4728A/P1	POTENTIOMETER: variable; carbon; 1-megohm, ±20%; taper A; includes SW_2 on back.	Volume control.
R_{19}	3Z6805A6–1	RESISTOR: fixed; carbon; 5.6-megohm, ±10%; 1/3-watt; insulated.	Voltage dropping, V_5 screen grid.
R_{20}	3Z6801–23	RESISTOR: fixed; carbon; 1-megohm, ±10%, 1/3-watt; insulated.	Plate resistor, V_5.
R_{21}	3Z6733–2	RESISTOR: fixed; carbon; 330,000-ohm, ±10%; 1/3-watt; insulated.	B+ filter, V_5 plate.
SW_2	3Z9848.4	SWITCH: single pole-single throw; back of potentiometer R_{17}.	Power ON-OFF.
V_5	2T172	TUBE VT-172: RMA type 1S5.	Diode, second detector, and triode first audio amplifier.

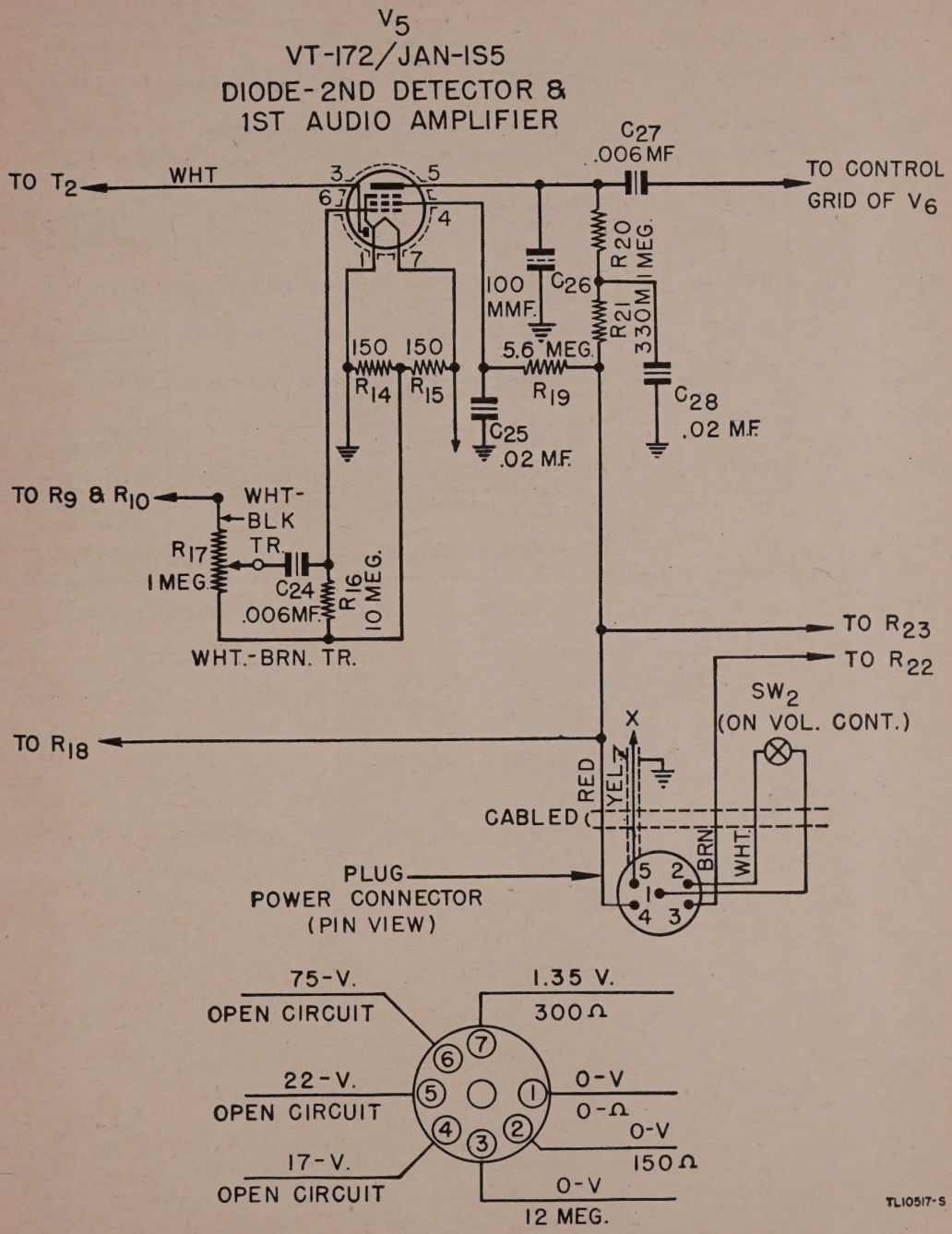


Figure 17. Diode, second detector and first audio amplifier stage diagram.

30. Audio Output Amplifier

Ref. symbol	Signal Corps stock No.	Name of part and description	Function
C_{29}	3DA100–82	CAPACITOR: fixed; paper; 0.1-mf, ±20%; 100 w-v; shielded.	Bypass, V_6 screen grid.
C_{30}	3DA4–17	CAPACITOR: fixed; paper; 0.004-mf, ±20%; 200 w-v.	Pad, audio output.
CH_6	3C362–15	CHOKE: 10 turns No. 22 solid insulated wire, wound on ¼" form.	Hash choke.
J_1	2Z5598	JACK: 2 contact with single-pole single-throw switch (SW_3) for Plug PL-55.	Headset connector and speaker-headset change-over switch.
R_{22}	3Z6803A3–1	RESISTOR: fixed; carbon; 3.3-megohm, ±10%; ⅓-watt; insulated.	Grid return, V_6.
R_{23}	3Z6582–1	RESISTOR: fixed; carbon; 8,200-ohm, ±10%; ⅓-watt; insulated.	Voltage dropping V_6 screen grid.
SPK_1	2C4728A/S5	SPEAKER: 4" permanent magnet type; includes output transformer (T_3) and 5-prong connector plug.	Reproducer.
SW_3	3Z9848.5	SWITCH: single-pole, single-throw; part of Jack J_1, operated by headset plug.	Speaker-headset change-over.
T_3	2Z9977	TRANSFORMER: on speaker SPK_1; impedances, primary 12,000 ohms; secondaries: 3 and 8,000 ohms; the 8,000-ohm winding is provided with a 250-ohm tap.	Output transformer with secondaries for headset and loudspeaker.
V_6	2T174	TUBE VT–174: RMA type 3S4.	Audio output.

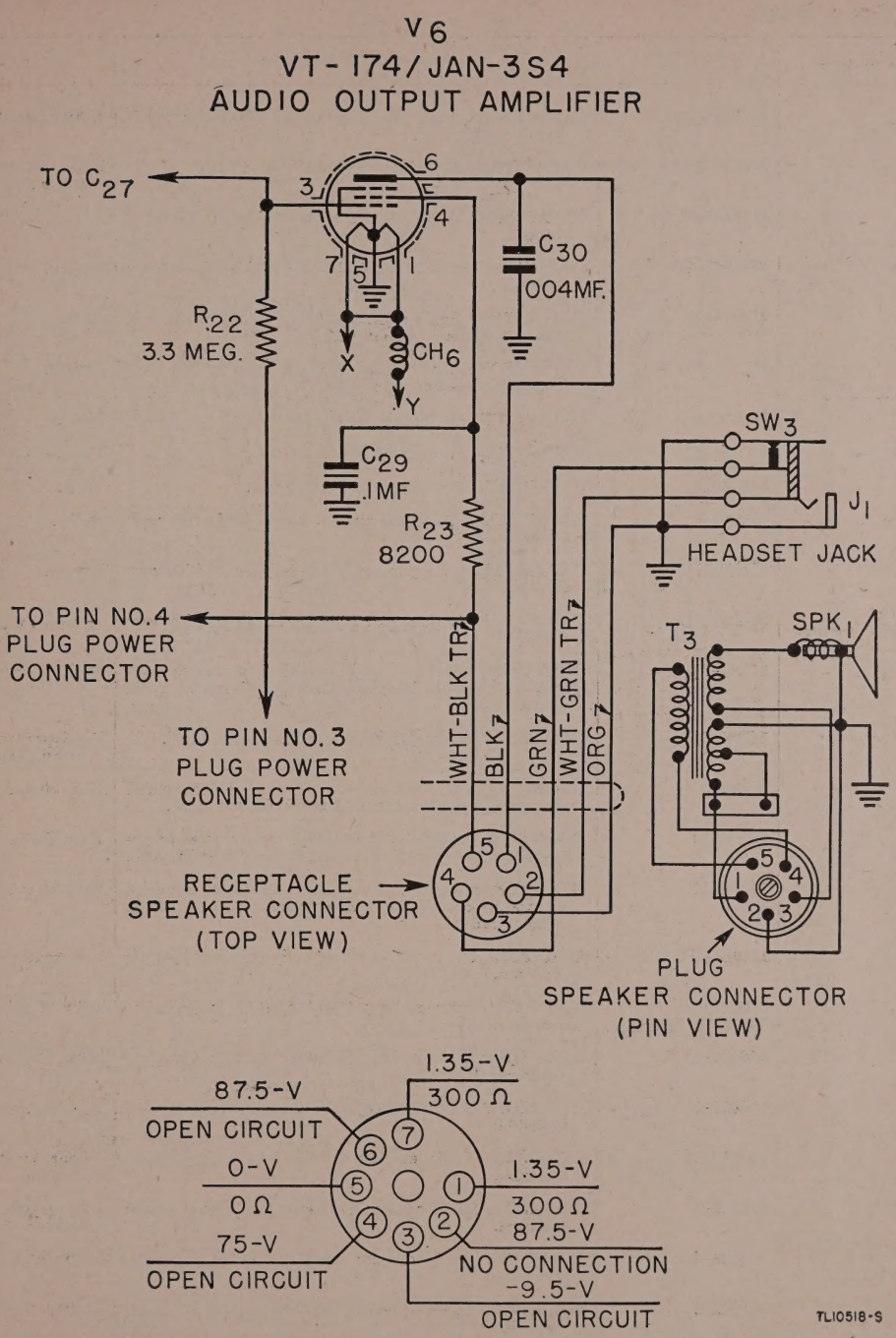


Figure 18. Audio output amplifier stage diagram.

31. Power Supply

Ref. symbol	Signal Corps stock No.	Name of part and description	Function
CA_{492}	3D492	CAPACITOR: fixed; dry electrolytic; 24,000-mf; 2-volt dcw; 3″ x 4″ x 5½″.	Filter capacitor.
C_{31}	3DB3000	CAPACITOR: electrolytic; 3,000-mf, 3 w-v.	Filter, filament supply.
C_{32}	3DA100–81	CAPACITOR: fixed; paper; 0.1-mf, ±20%; 100 w-v; shielded.	Bypass.
C_{33}	3DA350–4	CAPACITOR: fixed; paper; 0.35-mf, +20%−5%; 100 w-v; shielded.	Bypass.
C_{34}	3DA10–101	CAPACITOR: fixed; paper; 0.01-mf, ±10%; 1200 w-v; shielded; in same clamp as C_{35}.	Buffer.
C_{35}	3DA50–30	CAPACITOR: fixed; paper; 0.05-mf, ±20%; 200 w-v; shielded; in same clamp as C_{34}.	Bypass.
C_{36}	3DB30–3	CAPACITOR: electrolytic; 30-mf, 150 w-v.	Filter.
C_{37}	3DB30–3	CAPACITOR: electrolytic; 30-mf, 150 w-v.	Filter.
C_{38}	3DB300	CAPACITOR: electrolytic; 300-mf, 15 w-v.	Filter.
C_{39}	3DA70–3	CAPACITOR: fixed; paper; 0.07-mf, ±10%, 800 w-v; shielded.	Buffer.
C_{40}	3DA500–41	CAPACITOR: fixed; paper; 0.5-mf, +20%−5%; 100 w-v; shielded.	Bypass.
C_{41}	3DA500–41	CAPACITOR: fixed; paper; 0.5-mf, +20%−5%, 100 w-v; shielded.	Bypass.
CH_1	3C362–7	CHOKE: 35 turns No. 16 enameled copper wire; wax-treated; paper-covered; inductance, 12.2 mh at 1,000 cycles.	Hash choke.
CH_2	3C362–8	CHOKE: 0.02-henry d-c resistance; 1.7-ohm; shielded.	Receiver filament Filter choke.
CH_3	3C362–9	CHOKE: r-f, 4-pie; 100 turns No. 38 single silk enameled wire per pie; d-c resistance 22 ohms; bakelite cover.	Hash choke.
CH_4	3C362–10	CHOKE: 35 turns No. 16 enameled copper wire; paper-covered; wax-treated; inductance, 12.2-mh at 1,000 cycles.	Hash choke.
CH_5	3C362–11	CHOKE: charging coil; 120 turns No. 22 double enameled wire; paper covering; wax-dipped; inductance, 30-mh at 1,000 cycles.	Hash choke.
R_{24}	3Z6015–11	RESISTOR: fixed; carbon; 150-ohm, ±10%; ⅓-watt; insulated.	Voltage dropping.
R_{25}	3Z6010–36	RESISTOR: fixed; carbon; 100-ohm, ±10%; ⅓-watt; insulated.	Buffer, T_4 primary.
R_{26}	3Z6010–36	RESISTOR: fixed; carbon; 100-ohm, ±10%; ⅓-watt; insulated.	Buffer, T_4 primary.
R_{27}	3Z6027–2	RESISTOR: fixed; carbon; 270-ohm, ±10%; 1-watt; insulated.	B+ filter.
R_{28}	3Z5998–1	RESISTOR: fixed; carbon; 8.2-ohm, ±10%; ½-watt; insulated.	Filament voltage dropping, V_7.
R_{29}	3Z6582–1	RESISTOR: fixed; carbon; 8,200-ohm, ±10%; ⅓-watt; insulated.	Bias voltage resistor.
R_{30}	3Z6022–8	RESISTOR: fixed; carbon; 220-ohm, ±10%; 1-watt; insulated.	Buffer, T_5 primary.
R_{31}	3Z6022–8	RESISTOR: fixed; carbon; 220-ohm, ±10%; 1-watt; insulated.	Buffer, T_5 primary.

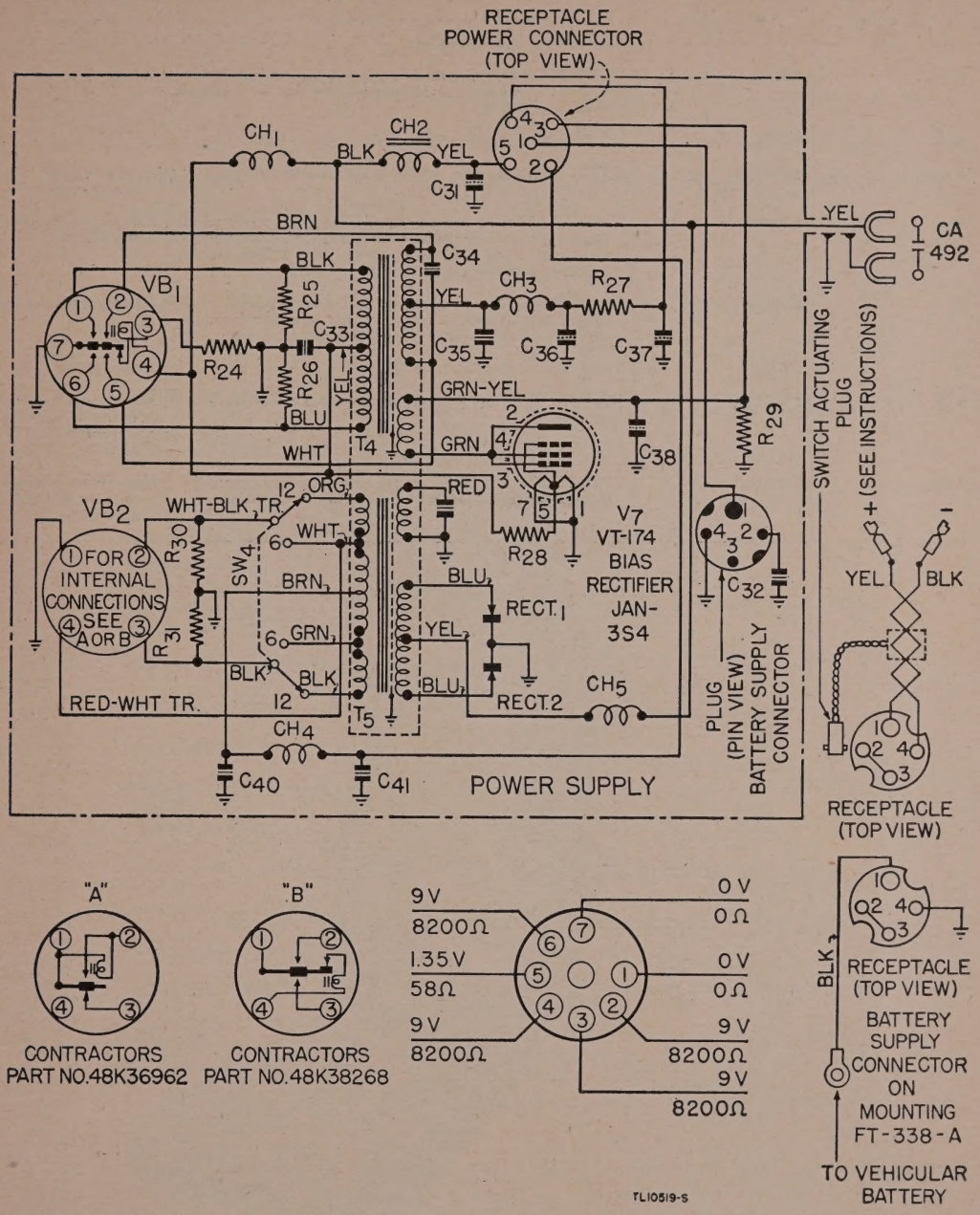


Figure 19. Power supply stage diagram.

31. Power Supply (continued).

Ref. symbol	Signal Corps stock No.	Name of part and description	Function
$Rect_1$	2Z7521	RECTIFIER: selenium; 2.2-volt at 1.5-ampere output with 6.5-volt rms input to rectifiers $Rect_1$ and 2; on same bracket as $Rect_2$.	Battery rectifier.
$Rect_2$	2Z7521	RECTIFIER: Same as $Rect_1$.	
SW_4	3Z9856.3	SWITCH: double-pole, double-throw; self-return type.	Battery voltage change-over.
T_4	2Z9979	TRANSFORMER: in same can as T_5; consists of 3 windings: 1 low-voltage center-tapped primary, 1 low-voltage secondary (bias rectifier filament), and 1 high-voltage center-tapped secondary.	B+ and bias supply transformer.
T_5	2Z9979–1	TRANSFORMER: in same can as T_4; consists of 3 windings: 1 multitapped primary, 1 buffer secondary winding, and 1 low-voltage center-tapped secondary.	Battery transformer.
V_7	2T174	TUBE VT–174: RMA type 3S4.	Bias rectifier.
VB_1	3H6708A	VIBRATOR VB–8–A; 7-prong; synchronous type; 2-volt driving coil.	Power transformer primary current interrupter and B rectifier.
VB_2	3H6709A	VIBRATOR VB–9–A; 4-prong; nonsynchronous type; driving coil designed to operate over 5- to 15-volt range.	Battery transformer primary current interrupter.

SECTION IX

SUPPLEMENTARY DATA

32. Parts Identification

The following illustrations are provided to aid in identifying and servicing the various component parts of Radio Receivers BC–728–A and –C.

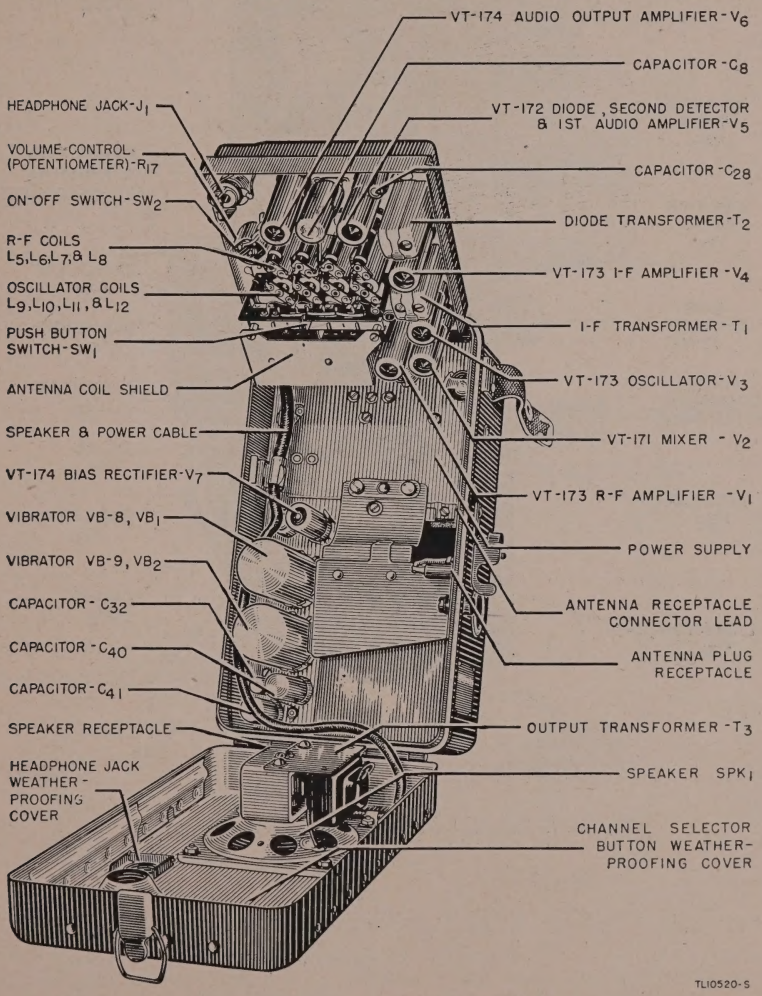


Figure 20. Radio Receiver BC–728–(*), interior view showing chassis raised on hinge.

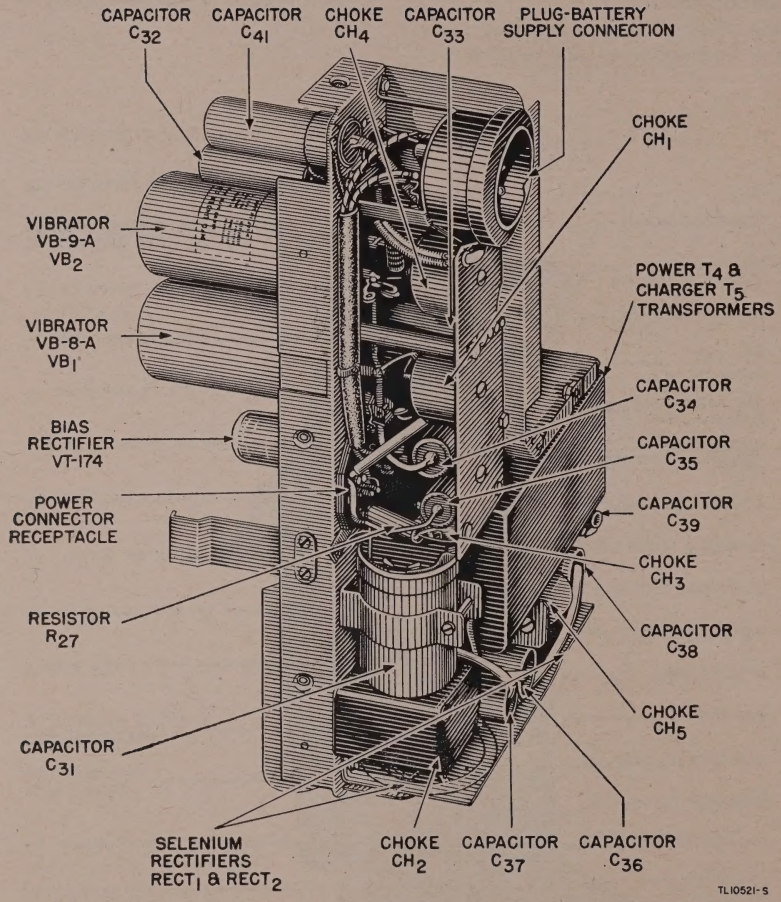


Figure 21. Radio Receiver BC–728–(*), power supply unit.

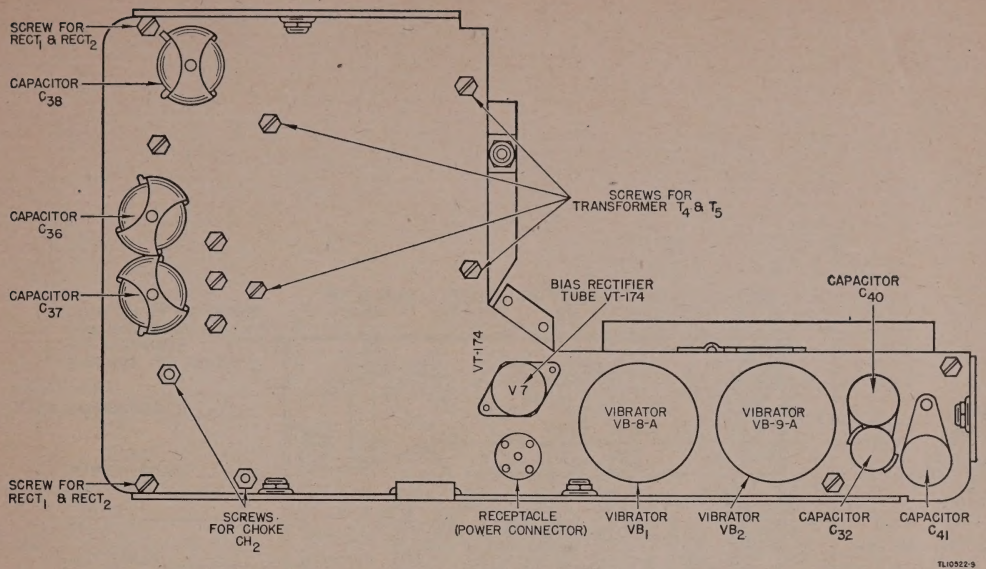


Figure 22. Radio Receiver BC–728–(*), power supply, top view, showing major parts.

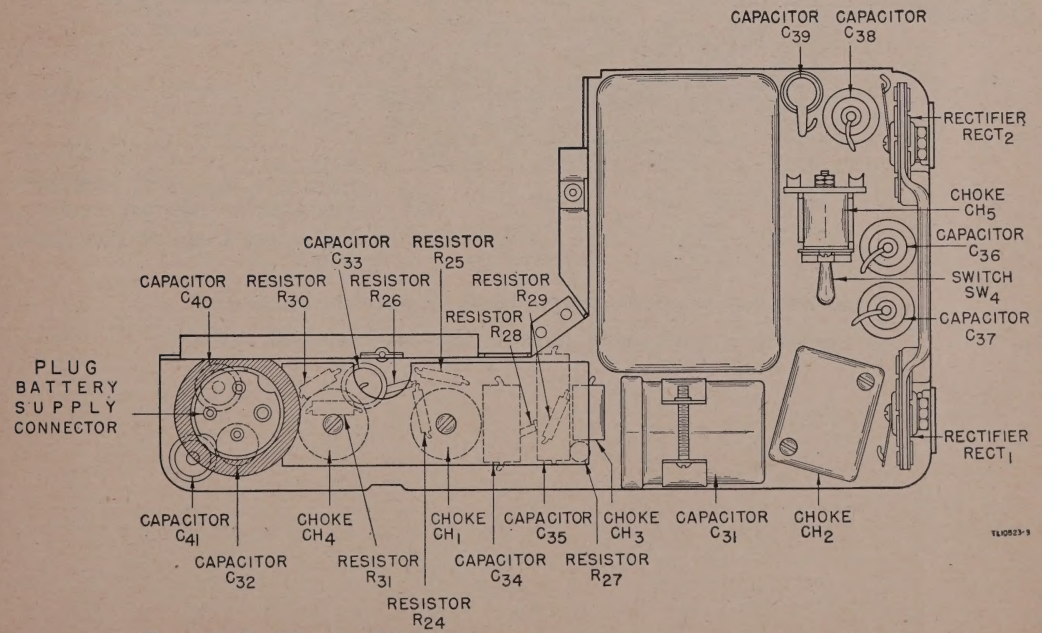


Figure 23. Radio Receiver BC–728–(*), power supply, bottom view, showing major parts.

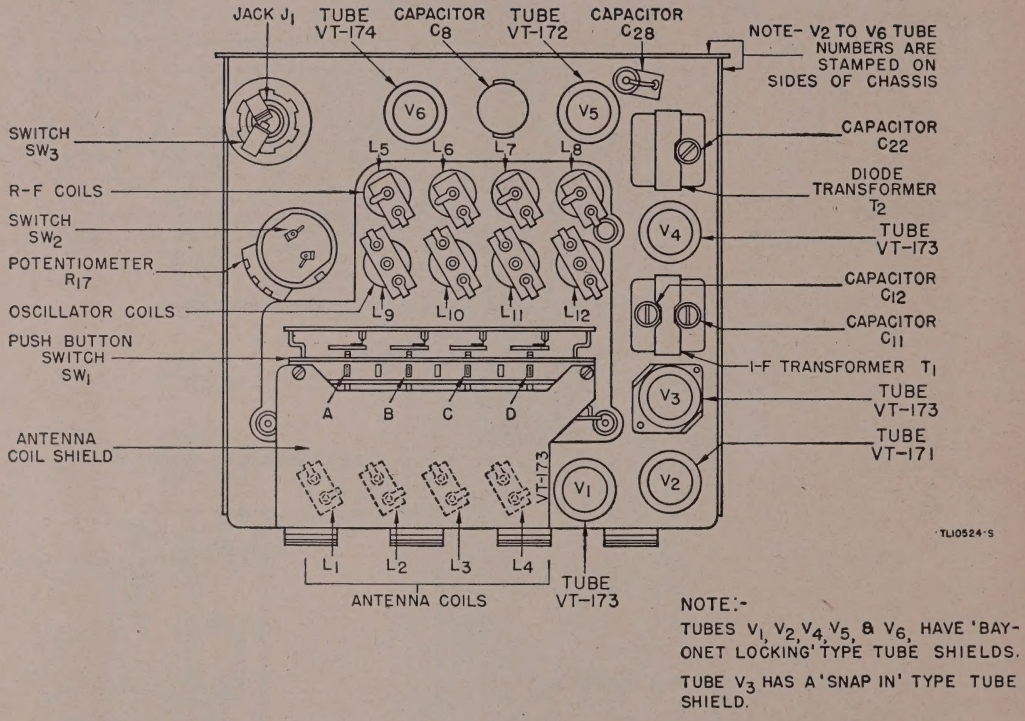


Figure 24. Radio Receiver BC-728-(*), chassis, top view, showing major parts.

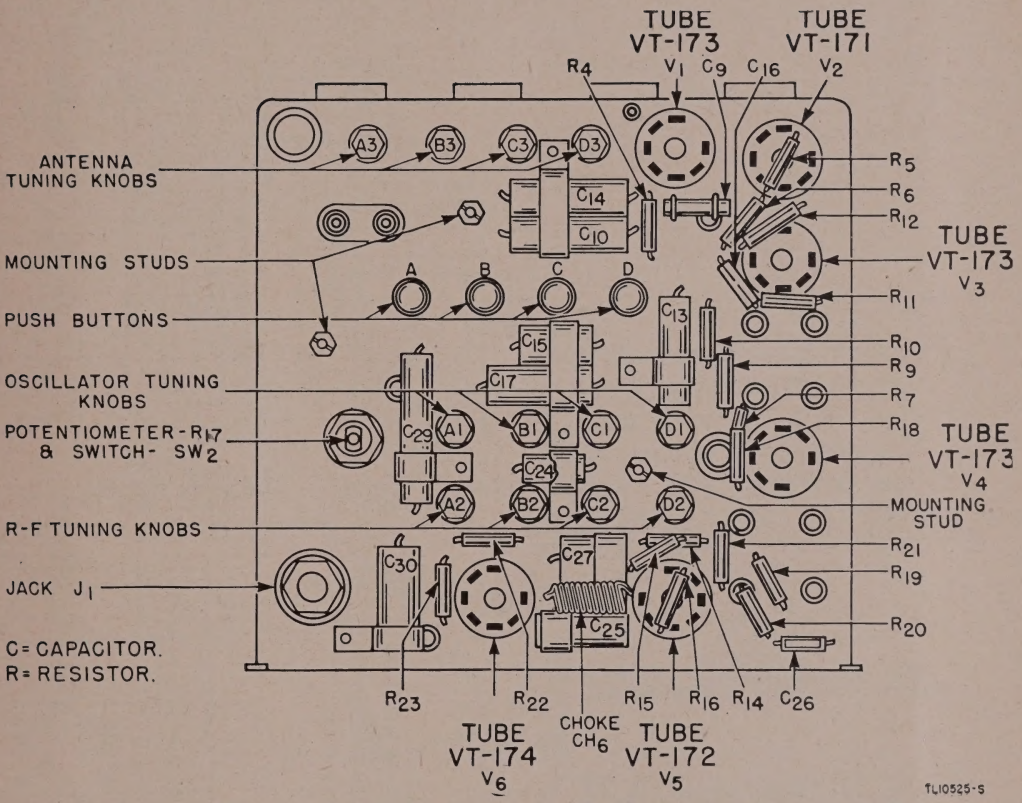
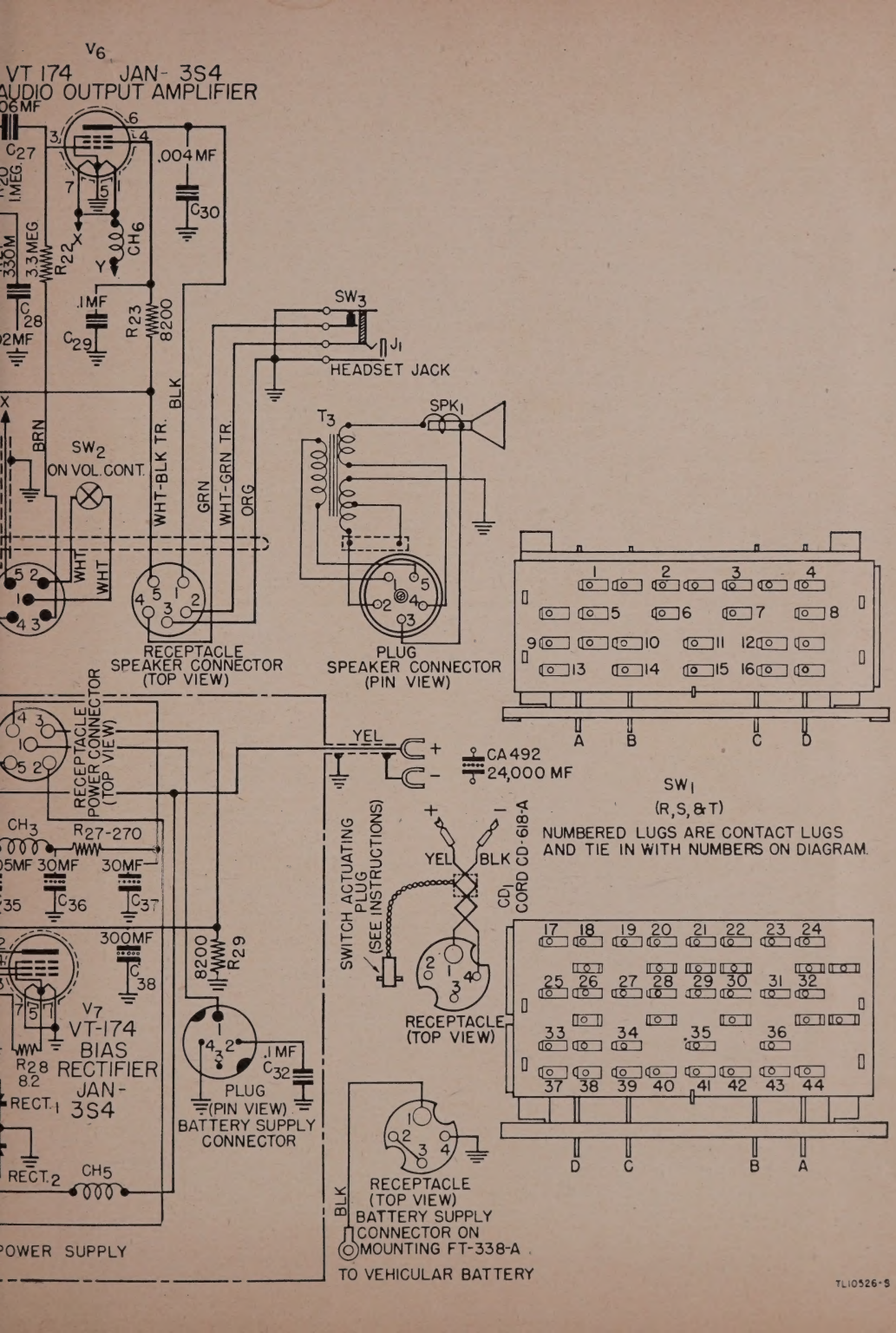


Figure 25. Radio Receiver BC–728–(*), chassis, bottom view, showing major parts.


V6
VT 174 JAN- 3S4
AUDIO OUTPUT AMPLIFIER
.004 MF
C30
C27
R22
CH6
3.3 MEG
.1 MF
C29
R23
8200
SW3
J1
HEADSET JACK
BLK
BRN
SW2
ON VOL. CONT.
WHT-BLK TR.
GRN
WHT-GRN TR.
ORG
WHT
WHT
T3
SPK1
RECEPTACLE
SPEAKER CONNECTOR
(TOP VIEW)
PLUG
SPEAKER CONNECTOR
(PIN VIEW)
RECEPTACLE
POWER CONNECTOR
(TOP VIEW)
YEL
CA 492
24,000 MF
SW1
(R,S,&T)
NUMBERED LUGS ARE CONTACT LUGS
AND TIE IN WITH NUMBERS ON DIAGRAM.
CH3
R27-270
30MF
30MF
C36
C37
300MF
C38
8200
R29
V7
VT-174
BIAS
RECTIFIER
JAN-
3S4
R28
8.2
RECT.1
RECT.2
CH5
.1 MF
C32
PLUG
(PIN VIEW)
BATTERY SUPPLY
CONNECTOR
SWITCH ACTUATING
PLUG
(SEE INSTRUCTIONS)
YEL
BLK
CD1
CORD CD-618-A
RECEPTACLE
(TOP VIEW)
RECEPTACLE
(TOP VIEW)
BATTERY SUPPLY
CONNECTOR ON
MOUNTING FT-338-A
BLK
TO VEHICULAR BATTERY
POWER SUPPLY
TL10526-S

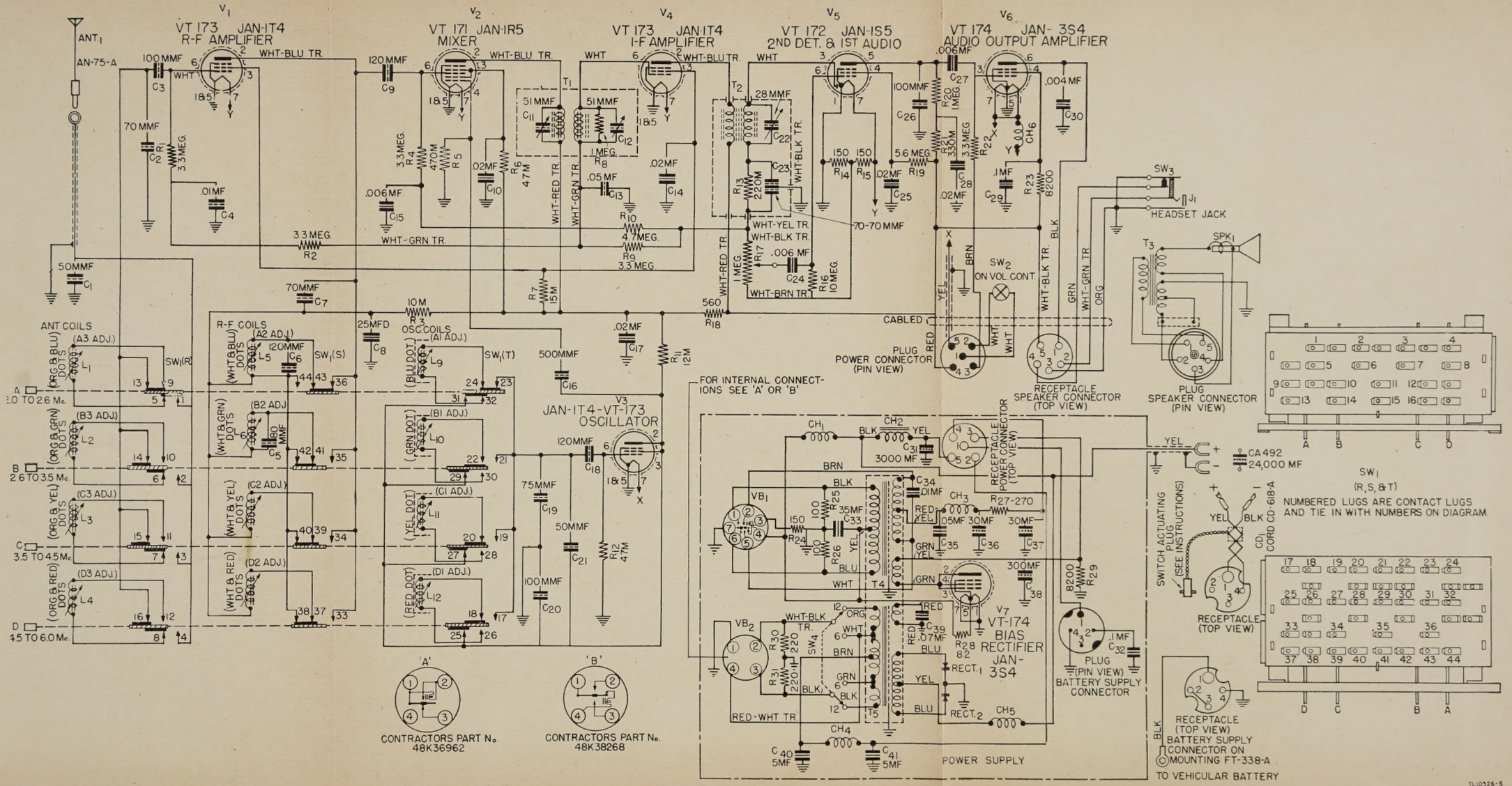


Figure 26. Radio Receiver BC-728-(*), schematic diagram.

TM11-4005-3